

APPENDIX E

**First Quarter 2017 Analytical Laboratory Reports,
Chain of Custody Forms, and Validation Reports**

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Human Bacteroidetes ID Analysis:

- 220 SM-7B – March 15, 2017, Source Molecular
- a. Outfall 001 – February 17, 2017
 - b. Outfall 008 – February 17, 2017
 - c. Outfall 006 – February 17, 2017
 - d. Outfall 011 – February 17, 2017
 - e. Outfall 004 – February 17, 2017
- 221 SM-7B – March 27, 2017, Source Molecular
- a. R-1 – February 17, 2017
 - b. Perimeter – February 27, 2017
- 222 SM-7C – March 30, 2017, Source Molecular
- a. R-1 – March 27, 2017
 - b. Perimeter – March 27, 2017

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174196-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2017

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- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174196-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170120_Grab	440-174196-1	N/A	Water	1/20/2017 3:30:00 PM	E120.1, E1664, E624, SM2540F, SM9221F, SW8015D/V, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174196-1:

- The laboratories received the sample in this SDG on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Analysis for Human Bacteroidetes was subcontracted to Source Molecular. No COC or sample receipt information for this shipment was provided. Sample data were not qualified.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 8015B— PURGEABLE AND EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS (TPHs)

L. Calvin of MEC^x reviewed the SDG on March 24, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Total Fuel Hydrocarbons (DVP-8, Rev. 0)*, EPA Method 8015B, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The preserved water sample was analyzed within 14 days for purgeable TPH (GRO), and the water sample was extracted within seven days of collection and analyzed within 40 days of extraction for extractable TPH (DRO).

III.2. CALIBRATION

Initial calibration %RSDs were within the method control limit of $\leq 20\%$, and the ICV and CCV %Ds were within $\leq 15\%$.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits for GRO and DRO of 80-120% and 45-120%, respectively.

III.3.3. SURROGATE RECOVERY

Recoveries were within laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall001_20170120_Grab, for both GRO and DRO. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory reported two total petroleum hydrocarbon ranges: C₄-C₁₂ (GRO), and C₁₃-C₂₈ (DRO). Review indicated no issues with target compound range identification.



III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified. Review of the raw data did not indicate calculation or transcription errors. Nondetects are valid to the reporting limit.

IV. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

IV.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

IV.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met, with three exceptions. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits, with the exception of %Ds of 74.3% for acrolein, 49.1% for 1,2-dichloro-1,1,2-trifluoroethene, and 42.0% for trichlorofluoromethane. The result for acrolein was rejected for other reasons (see Matrix Spike/Matrix Spike Duplicate section) and was not further qualified. Results for 1,2-dichloro-1,1,2-trifluoroethane and trichlorofluoromethane, both nondetects, were qualified as estimated (UJ).

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

IV.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall001_20170120_Grab, for all target compounds. Acrolein was not recovered in the MS or MSD. The nondetect parent sample result for acrolein was rejected (R). Remaining recoveries and RPDs were within the laboratory control limits.



IV.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

IV.4.1. TRIP BLANKS

Sample TB-20170120 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

IV.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

IV.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

IV.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

IV.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

IV.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F and 9221F*, SAM348-357 (Human Bacteroides by Quantitative PCR), *EPA Methods 1664A and 120.1*, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).



V.1. HOLDING TIMES

The holding time for human bacteroides is filtration of the sample within 24-48 hours of collection. This holding time was missed for the sample in this SDG. As DNA for human bacteroides was present, no qualification was applied as the test is a present or absent text. The remaining sample analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 8 hours for *E. coli*
- 28 days for specific conductance

V.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing, and biological controls were acceptable. No instrument calibration information was provided for specific conductance analysis.

V.3. QUALITY CONTROL SAMPLES

V.3.1. *METHOD BLANKS*

The method blanks had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to the biological method or settleable solids. The biological method negative control sample was acceptable. According to the laboratory narrative, negative controls were acceptable for method SAM348-357.

V.3.2. *LABORATORY CONTROL SAMPLES*

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria. According to the laboratory narrative, positive controls were acceptable for method SAM348-357.

V.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were not performed on a sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM, settleable solids and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

It should be noted that no sample raw data was presented in the SDG for specific conductance analysis; no sample results were qualified.



V.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

V.5.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401741961

Analysis Method E120.1

Sample Name Outfall001_20170120_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	110	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall001_20170120_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.2	1.4	mg/L	U	U	

Analysis Method E624

Sample Name Outfall001_20170120_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	ND	2.0	1.0	ug/L	U	UJ	C
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	R	Q
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U
Cyclohexane	N	110-82-7	ND	2.0	1.0	ug/L	U	U
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U
m,p-Xylenes	N	179601-23-1	ND	1.0	0.50	ug/L	U	U
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
o-Xylene	N	95-47-6	ND	0.50	0.25	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	UJ C
Trifluorotrchloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SAM348-357

Sample Name Outfall001_20170120_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 3:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	present			CEs/100			

Analysis Method SM2540F

Sample Name Outfall001_20170120_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 3:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

Analysis Method SM9221F

Sample Name Outfall001_20170120_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 3:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	810	1.8	1.8	mpn/100			

Analysis Method SW8015D

Sample Name Outfall001_20170120_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 3:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Petroleum Hydrocarbons (C13- C28)(DRO)	N	PHC1328	ND	0.52	0.10	mg/L	U	U	

Analysis Method SW8015V

Sample Name Outfall001_20170120_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 3:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174196-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
PHC as Unknown/Waste Product, Light Range C4-C12	N	PHCML	ND	0.050	0.025	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174196-1

Client Project/Site: Annual Outfall 001 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/16/2017 10:25:50 PM

Urvashi Patel, Manager of Project Management

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/16/2017 10:25:50 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174196-1	Outfall001_20170120_Grab	Water	01/20/17 15:30	01/20/17 21:06
440-174196-3	TB-20170120	Water	01/20/17 15:30	01/20/17 21:06

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Job ID: 440-174196-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-174196-1**

Comments

No additional comments.

Receipt

The samples were received on 1/20/2017 9:06 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.6° C and 3.8° C.

Receipt Exceptions

The following sample(s) was listed on the Chain of Custody (COC); however, no sample(s) was received: \$ bacti Total on COC but only Received TWO

GC/MS VOA

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-383982 recovered above the upper control limit for Trichlorofluoromethane. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following samples are impacted: Outfall001_20170120_Grab (440-174196-1), TB-20170120 (440-174196-3) and (CCVIS 440-383982/4).

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-383734 recovered above the upper control limit for Acrolein. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following samples are impacted: Outfall001_20170120_Grab (440-174196-1), TB-20170120 (440-174196-3) and (CCVIS 440-383734/2).

Method(s) 624: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 440-383734 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385706 and analytical batch 440-385938. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 1664A: Elevated reporting limits are provided for the following sample due to insufficient sample provided for method 1664A preparation/analysis: Outfall001_20170120_Grab (440-174196-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Job ID: 440-174196-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Client Sample ID: Outfall001_20170120_Grab

Lab Sample ID: 440-174196-1

Date Collected: 01/20/17 15:30

Matrix: Water

Date Received: 01/20/17 21:06

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 10:10	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 10:10	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 10:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/24/17 14:05	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 14:05	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/24/17 14:05	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 14:05	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 14:05	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Cyclohexane	ND		2.0	1.0	ug/L			01/24/17 14:05	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/24/17 14:05	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 14:05	1
o-Xylene	ND		0.50	0.25	ug/L			01/24/17 14:05	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 14:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 128		01/23/17 10:10	1
Dibromofluoromethane (Surr)	106		76 - 132		01/23/17 10:10	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/23/17 10:10	1
4-Bromofluorobenzene (Surr)	98		80 - 120		01/24/17 14:05	1
Dibromofluoromethane (Surr)	107		76 - 132		01/24/17 14:05	1
Toluene-d8 (Surr)	104		80 - 128		01/24/17 14:05	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Client Sample ID: Outfall001_20170120_Grab

Lab Sample ID: 440-174196-1

Date Collected: 01/20/17 15:30

Matrix: Water

Date Received: 01/20/17 21:06

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L	-		01/30/17 09:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		65 - 140					01/30/17 09:41	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.52	0.10	mg/L	-	01/23/17 07:19	01/23/17 18:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	68		45 - 120				01/23/17 07:19	01/23/17 18:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.2	1.4	mg/L	-	02/01/17 08:13	02/02/17 02:26	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	110		1.0	1.0	umhos/cm	-		01/24/17 08:28	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr	-		01/21/17 11:53	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	810		1.8	1.8	MPN/100mL	-		01/20/17 22:00	1

Client Sample ID: TB-20170120

Lab Sample ID: 440-174196-3

Date Collected: 01/20/17 15:30

Matrix: Water

Date Received: 01/20/17 21:06

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L	-		01/23/17 12:10	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Acrolein	ND		5.0	2.5	ug/L	-		01/23/17 12:10	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Acrylonitrile	ND		2.0	1.0	ug/L	-		01/23/17 12:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L	-		01/24/17 14:35	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Benzene	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Bromoform	ND		1.0	0.40	ug/L	-		01/24/17 14:35	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L	-		01/24/17 14:35	1
Bromomethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Carbon tetrachloride	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Chlorobenzene	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Dibromochloromethane	ND		0.50	0.25	ug/L	-		01/24/17 14:35	1
Chloroethane	ND		1.0	0.40	ug/L	-		01/24/17 14:35	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Client Sample ID: TB-20170120

Lab Sample ID: 440-174196-3

Date Collected: 01/20/17 15:30

Matrix: Water

Date Received: 01/20/17 21:06

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 14:35	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 14:35	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Cyclohexane	ND		2.0	1.0	ug/L			01/24/17 14:35	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/24/17 14:35	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 14:35	1
o-Xylene	ND		0.50	0.25	ug/L			01/24/17 14:35	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 14:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 128		01/23/17 12:10	1
Dibromofluoromethane (Surr)	107		76 - 132		01/23/17 12:10	1
4-Bromofluorobenzene (Surr)	99		80 - 120		01/23/17 12:10	1
4-Bromofluorobenzene (Surr)	98		80 - 120		01/24/17 14:35	1
Dibromofluoromethane (Surr)	106		76 - 132		01/24/17 14:35	1
Toluene-d8 (Surr)	103		80 - 128		01/24/17 14:35	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Client Sample ID: Outfall001_20170120_Grab

Lab Sample ID: 440-174196-1

Date Collected: 01/20/17 15:30

Matrix: Water

Date Received: 01/20/17 21:06

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383734	01/23/17 10:10	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	383982	01/24/17 14:05	AYL	TAL IRV
Total/NA	Analysis	8015B		1	10 mL	10 mL	385123	01/30/17 09:41	IM	TAL IRV
Total/NA	Prep	3510C			955 mL	1 mL	383737	01/23/17 07:19	L2A	TAL IRV
Total/NA	Analysis	8015B		1			383757	01/23/17 18:37	AMH	TAL IRV
Total/NA	Analysis	120.1		1			384000	01/24/17 08:28	XL	TAL IRV
Total/NA	Prep	1664A			970 mL	1000 mL	385706	02/01/17 08:13	L2A	TAL IRV
Total/NA	Analysis	1664A		1			385938	02/02/17 02:26	BAW	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	383617	01/21/17 11:53	RB	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384338		KRW	TAL IRV
								(Start) 01/20/17 22:00		
								(End) 01/23/17 21:15		

Client Sample ID: TB-20170120

Lab Sample ID: 440-174196-3

Date Collected: 01/20/17 15:30

Matrix: Water

Date Received: 01/20/17 21:06

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383734	01/23/17 12:10	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	383982	01/24/17 14:35	AYL	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383734/4
Matrix: Water
Analysis Batch: 383734

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 08:40	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 08:40	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 08:40	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 128		01/23/17 08:40	1
Dibromofluoromethane (Surr)	103		76 - 132		01/23/17 08:40	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/23/17 08:40	1

Lab Sample ID: LCS 440-383734/5
Matrix: Water
Analysis Batch: 383734

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	21.2		ug/L		85	37 - 150
Acrolein	25.0	31.4		ug/L		126	10 - 145
Acrylonitrile	250	225		ug/L		90	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 128
Dibromofluoromethane (Surr)	102		76 - 132
4-Bromofluorobenzene (Surr)	95		80 - 120

Lab Sample ID: 440-174196-1 MS
Matrix: Water
Analysis Batch: 383734

Client Sample ID: Outfall001_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	22.4		ug/L		90	10 - 140
Acrolein	ND		25.0	ND	LN	ug/L		0	10 - 147
Acrylonitrile	ND		250	243		ug/L		97	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	100		80 - 128
Dibromofluoromethane (Surr)	108		76 - 132
4-Bromofluorobenzene (Surr)	97		80 - 120

Lab Sample ID: 440-174196-1 MSD
Matrix: Water
Analysis Batch: 383734

Client Sample ID: Outfall001_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	22.6		ug/L		90	10 - 140	1	25
Acrolein	ND		25.0	ND	LN	ug/L		0	10 - 147	NC	40
Acrylonitrile	ND		250	236		ug/L		95	38 - 144	3	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174196-1 MSD

Matrix: Water

Analysis Batch: 383734

Client Sample ID: Outfall001_20170120_Grab

Prep Type: Total/NA

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD Qualifier</i>	<i>MSD Limits</i>
<i>Toluene-d8 (Surr)</i>	100		80 - 128
<i>Dibromofluoromethane (Surr)</i>	105		76 - 132
<i>4-Bromofluorobenzene (Surr)</i>	102		80 - 120

Lab Sample ID: MB 440-383982/5

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/24/17 09:04	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 09:04	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/24/17 09:04	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 09:04	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 09:04	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Cyclohexane	ND		2.0	1.0	ug/L			01/24/17 09:04	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/24/17 09:04	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 09:04	1
o-Xylene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 09:04	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-383982/5
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	94		80 - 120		01/24/17 09:04	1
Dibromofluoromethane (Surr)	106		76 - 132		01/24/17 09:04	1
Toluene-d8 (Surr)	105		80 - 128		01/24/17 09:04	1

Lab Sample ID: LCS 440-383982/6
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	26.4		ug/L		105	70 - 130
1,1,2,2-Tetrachloroethane	25.0	24.5		ug/L		98	63 - 130
1,1,2-Trichloroethane	25.0	27.6		ug/L		110	70 - 130
1,1-Dichloroethane	25.0	25.9		ug/L		104	64 - 130
1,1-Dichloroethene	25.0	24.5		ug/L		98	70 - 130
1,2-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
1,2-Dichloroethane	25.0	26.4		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	25.6		ug/L		102	67 - 130
1,3-Dichlorobenzene	25.0	26.1		ug/L		104	70 - 130
1,4-Dichlorobenzene	25.0	23.9		ug/L		96	70 - 130
Benzene	25.0	25.0		ug/L		100	68 - 130
Bromoform	25.0	27.5		ug/L		110	60 - 148
Bromomethane	25.0	23.1		ug/L		92	64 - 139
Carbon tetrachloride	25.0	26.8		ug/L		107	60 - 150
Chlorobenzene	25.0	24.7		ug/L		99	70 - 130
Dibromochloromethane	25.0	27.5		ug/L		110	69 - 145
Chloroethane	25.0	23.4		ug/L		94	64 - 135
Chloroform	25.0	26.1		ug/L		104	70 - 130
Chloromethane	25.0	24.7		ug/L		99	47 - 140
cis-1,3-Dichloropropene	25.0	26.5		ug/L		106	70 - 133
Bromodichloromethane	25.0	26.9		ug/L		108	70 - 132
Ethylbenzene	25.0	24.8		ug/L		99	70 - 130
Methylene Chloride	25.0	24.6		ug/L		99	52 - 130
Tetrachloroethene	25.0	26.2		ug/L		105	70 - 130
Toluene	25.0	24.9		ug/L		100	70 - 130
trans-1,2-Dichloroethene	25.0	26.1		ug/L		104	70 - 130
trans-1,3-Dichloropropene	25.0	25.9		ug/L		103	70 - 132
Trichlorofluoromethane	25.0	26.8		ug/L		107	60 - 150
Vinyl chloride	25.0	22.0		ug/L		88	59 - 133
Trichloroethene	25.0	27.5		ug/L		110	70 - 130
cis-1,2-Dichloroethene	25.0	26.8		ug/L		107	70 - 133
m,p-Xylene	25.0	25.8		ug/L		103	70 - 130
Naphthalene	25.0	26.5		ug/L		106	60 - 140
o-Xylene	25.0	26.3		ug/L		105	70 - 130
Xylenes, Total	50.0	52.1		ug/L		104	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	94		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-383982/6
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

<i>Surrogate</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	106		76 - 132
<i>Toluene-d8 (Surr)</i>	102		80 - 128

Lab Sample ID: 440-174173-E-1 MS
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Matrix Spike
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1,1-Trichloroethane	ND		25.0	25.8		ug/L		103	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	24.9		ug/L		100	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.5		ug/L		110	70 - 130
1,1-Dichloroethane	ND		25.0	26.1		ug/L		104	65 - 130
1,1-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130
1,2-Dichlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130
1,2-Dichloroethane	ND		25.0	26.0		ug/L		104	56 - 146
1,2-Dichloropropane	ND		25.0	25.3		ug/L		101	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.2		ug/L		109	70 - 130
1,4-Dichlorobenzene	ND		25.0	24.9		ug/L		100	70 - 130
Benzene	ND		25.0	24.6		ug/L		99	66 - 130
Bromoform	ND		25.0	27.2		ug/L		109	59 - 150
Bromomethane	ND		25.0	20.0		ug/L		80	62 - 131
Carbon tetrachloride	ND		25.0	26.7		ug/L		107	60 - 150
Chlorobenzene	ND		25.0	24.9		ug/L		100	70 - 130
Dibromochloromethane	ND		25.0	26.7		ug/L		107	70 - 148
Chloroethane	ND		25.0	22.0		ug/L		88	68 - 130
Chloroform	ND		25.0	25.8		ug/L		103	70 - 130
Chloromethane	ND		25.0	26.4		ug/L		106	39 - 144
cis-1,3-Dichloropropene	ND		25.0	25.9		ug/L		104	70 - 133
Bromodichloromethane	ND		25.0	26.8		ug/L		107	70 - 138
Ethylbenzene	ND		25.0	24.9		ug/L		100	70 - 130
Methylene Chloride	ND		25.0	26.0		ug/L		104	52 - 130
Tetrachloroethene	ND		25.0	25.9		ug/L		104	70 - 137
Toluene	ND		25.0	24.8		ug/L		99	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
trans-1,3-Dichloropropene	ND		25.0	26.0		ug/L		104	70 - 138
Trichlorofluoromethane	ND		25.0	31.6		ug/L		126	60 - 150
Vinyl chloride	ND		25.0	22.5		ug/L		90	50 - 137
Trichloroethene	ND		25.0	27.1		ug/L		108	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
m,p-Xylene	ND		25.0	25.8		ug/L		103	70 - 133
Naphthalene	ND		25.0	27.1		ug/L		108	60 - 140
o-Xylene	ND		25.0	26.3		ug/L		105	70 - 133
Xylenes, Total	ND		50.0	52.1		ug/L		104	70 - 133

<i>Surrogate</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
<i>4-Bromofluorobenzene (Surr)</i>	96		80 - 120
<i>Dibromofluoromethane (Surr)</i>	105		76 - 132

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174173-E-1 MS

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Surrogate	<i>MS</i> %Recovery	<i>MS</i> Qualifier	Limits
<i>Toluene-d8 (Surr)</i>	100		80 - 128

Lab Sample ID: 440-174173-E-1 MSD

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.5		ug/L		102	70 - 130	1	20
1,1,2,2-Tetrachloroethane	ND		25.0	24.5		ug/L		98	63 - 130	2	30
1,1,2-Trichloroethane	ND		25.0	27.4		ug/L		110	70 - 130	0	25
1,1-Dichloroethane	ND		25.0	24.9		ug/L		100	65 - 130	5	20
1,1-Dichloroethene	ND		25.0	23.7		ug/L		95	70 - 130	9	20
1,2-Dichlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130	4	20
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	25.0		ug/L		100	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	25.7		ug/L		103	70 - 130	6	20
1,4-Dichlorobenzene	ND		25.0	23.8		ug/L		95	70 - 130	4	20
Benzene	ND		25.0	24.2		ug/L		97	66 - 130	2	20
Bromoform	ND		25.0	27.4		ug/L		110	59 - 150	1	25
Bromomethane	ND		25.0	20.4		ug/L		81	62 - 131	2	25
Carbon tetrachloride	ND		25.0	25.9		ug/L		104	60 - 150	3	25
Chlorobenzene	ND		25.0	24.5		ug/L		98	70 - 130	1	20
Dibromochloromethane	ND		25.0	26.5		ug/L		106	70 - 148	1	25
Chloroethane	ND		25.0	22.0		ug/L		88	68 - 130	0	25
Chloroform	ND		25.0	25.6		ug/L		102	70 - 130	1	20
Chloromethane	ND		25.0	25.5		ug/L		102	39 - 144	3	25
cis-1,3-Dichloropropene	ND		25.0	25.4		ug/L		101	70 - 133	2	20
Bromodichloromethane	ND		25.0	26.2		ug/L		105	70 - 138	3	20
Ethylbenzene	ND		25.0	24.1		ug/L		96	70 - 130	3	20
Methylene Chloride	ND		25.0	24.4		ug/L		98	52 - 130	6	20
Tetrachloroethene	ND		25.0	25.7		ug/L		103	70 - 137	1	20
Toluene	ND		25.0	23.9		ug/L		95	70 - 130	4	20
trans-1,2-Dichloroethene	ND		25.0	26.0		ug/L		104	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	25.0		ug/L		100	70 - 138	4	25
Trichlorofluoromethane	ND		25.0	26.0		ug/L		104	60 - 150	19	25
Vinyl chloride	ND		25.0	22.5		ug/L		90	50 - 137	0	30
Trichloroethene	ND		25.0	26.3		ug/L		105	70 - 130	3	20
cis-1,2-Dichloroethene	ND		25.0	26.1		ug/L		104	70 - 130	1	20
m,p-Xylene	ND		25.0	24.5		ug/L		98	70 - 133	5	25
Naphthalene	ND		25.0	26.7		ug/L		107	60 - 140	2	30
o-Xylene	ND		25.0	25.6		ug/L		102	70 - 133	3	20
Xylenes, Total	ND		50.0	50.1		ug/L		100	70 - 133	4	20

Surrogate	<i>MSD</i> %Recovery	<i>MSD</i> Qualifier	Limits
<i>4-Bromofluorobenzene (Surr)</i>	95		80 - 120
<i>Dibromofluoromethane (Surr)</i>	104		76 - 132
<i>Toluene-d8 (Surr)</i>	101		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-385123/5
Matrix: Water
Analysis Batch: 385123

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/30/17 08:44	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		65 - 140					01/30/17 08:44	1

Lab Sample ID: LCS 440-385123/3
Matrix: Water
Analysis Batch: 385123

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.800	0.684		mg/L		85	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	108		65 - 140				

Lab Sample ID: 440-174196-1 MS
Matrix: Water
Analysis Batch: 385123

Client Sample ID: Outfall001_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		0.800	0.689		mg/L		86	65 - 140
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	96		65 - 140						

Lab Sample ID: 440-174196-1 MSD
Matrix: Water
Analysis Batch: 385123

Client Sample ID: Outfall001_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		0.800	0.678		mg/L		85	65 - 140	2	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	94		65 - 140								

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-383737/1-A
Matrix: Water
Analysis Batch: 383757

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383737

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.50	0.10	mg/L		01/23/17 07:19	01/23/17 18:57	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	77		45 - 120				01/23/17 07:19	01/23/17 18:57	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 440-383737/2-A
Matrix: Water
Analysis Batch: 383757

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383737

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
C10-C28	1.00	0.700		mg/L		70	40 - 115
Surrogate		LCS %Recovery	LCS Qualifier				Limits
<i>n-Octacosane</i>		78					45 - 120

Lab Sample ID: 440-174196-1 MS
Matrix: Water
Analysis Batch: 383757

Client Sample ID: Outfall001_20170120_Grab
Prep Type: Total/NA
Prep Batch: 383737

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
C10-C28	ND		1.13	0.777		mg/L		69	40 - 120
Surrogate		MS %Recovery	MS Qualifier						Limits
<i>n-Octacosane</i>		73							45 - 120

Lab Sample ID: 440-174196-1 MSD
Matrix: Water
Analysis Batch: 383757

Client Sample ID: Outfall001_20170120_Grab
Prep Type: Total/NA
Prep Batch: 383737

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
C10-C28	ND		0.939	0.583		mg/L		62	40 - 120	29	30
Surrogate		MSD %Recovery	MSD Qualifier						Limits		Limit
<i>n-Octacosane</i>		66							45 - 120		

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-384000/3
Matrix: Water
Analysis Batch: 384000

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			01/24/17 08:28	1

Lab Sample ID: LCS 440-384000/4
Matrix: Water
Analysis Batch: 384000

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Specific Conductance	768	768		umhos/cm		100	90 - 110

Lab Sample ID: 720-77155-C-5 DU
Matrix: Water
Analysis Batch: 384000

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Specific Conductance	95		92.8		umhos/cm		2	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-385706/1-A
Matrix: Water
Analysis Batch: 385938

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385706

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/01/17 08:13	02/02/17 02:26	1

Lab Sample ID: LCS 440-385706/2-A
Matrix: Water
Analysis Batch: 385938

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385706

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	35.8		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-385706/3-A
Matrix: Water
Analysis Batch: 385938

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385706

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.4		mg/L		91	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

GC/MS VOA

Analysis Batch: 383734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	624	
440-174196-3	TB-20170120	Total/NA	Water	624	
MB 440-383734/4	Method Blank	Total/NA	Water	624	
LCS 440-383734/5	Lab Control Sample	Total/NA	Water	624	
440-174196-1 MS	Outfall001_20170120_Grab	Total/NA	Water	624	
440-174196-1 MSD	Outfall001_20170120_Grab	Total/NA	Water	624	

Analysis Batch: 383982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	624	
440-174196-3	TB-20170120	Total/NA	Water	624	
MB 440-383982/5	Method Blank	Total/NA	Water	624	
LCS 440-383982/6	Lab Control Sample	Total/NA	Water	624	
440-174173-E-1 MS	Matrix Spike	Total/NA	Water	624	
440-174173-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

GC VOA

Analysis Batch: 385123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	8015B	
MB 440-385123/5	Method Blank	Total/NA	Water	8015B	
LCS 440-385123/3	Lab Control Sample	Total/NA	Water	8015B	
440-174196-1 MS	Outfall001_20170120_Grab	Total/NA	Water	8015B	
440-174196-1 MSD	Outfall001_20170120_Grab	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 383737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	3510C	
MB 440-383737/1-A	Method Blank	Total/NA	Water	3510C	
LCS 440-383737/2-A	Lab Control Sample	Total/NA	Water	3510C	
440-174196-1 MS	Outfall001_20170120_Grab	Total/NA	Water	3510C	
440-174196-1 MSD	Outfall001_20170120_Grab	Total/NA	Water	3510C	

Analysis Batch: 383757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	8015B	383737
MB 440-383737/1-A	Method Blank	Total/NA	Water	8015B	383737
LCS 440-383737/2-A	Lab Control Sample	Total/NA	Water	8015B	383737
440-174196-1 MS	Outfall001_20170120_Grab	Total/NA	Water	8015B	383737
440-174196-1 MSD	Outfall001_20170120_Grab	Total/NA	Water	8015B	383737

General Chemistry

Analysis Batch: 383617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	SM 2540F	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

General Chemistry (Continued)

Analysis Batch: 384000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	120.1	
MB 440-384000/3	Method Blank	Total/NA	Water	120.1	
LCS 440-384000/4	Lab Control Sample	Total/NA	Water	120.1	
720-77155-C-5 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 385706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	1664A	
MB 440-385706/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-385706/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-385706/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 385938

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	1664A	385706
MB 440-385706/1-A	Method Blank	Total/NA	Water	1664A	385706
LCS 440-385706/2-A	Lab Control Sample	Total/NA	Water	1664A	385706
LCSD 440-385706/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	385706

Biology

Analysis Batch: 384338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174196-1	Outfall001_20170120_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Grab

TestAmerica Job ID: 440-174196-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Human Fecal Toolbox ID™
Detection of the fecal Human gene biomarker for Human fecal contamination by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.
Date Received: January 24, 2017
Report Generated: February 7, 2017

SM #	Client #	Analysis Requested	Species	DNA Analytical Results
SM-7A24006	440-174196-1 (Outfall001_20170120)	Human Bacteroidetes ID	Dorei	Present
SM-7A24007	440-174173 (Outfall002_20170102_Grab)	Human Bacteroidetes ID	Dorei	Absent
SM-7A24008	440-174238 (Outfall018_20170122)	Human Bacteroidetes ID	Dorei	Absent

Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of Source Molecular Corporation, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to Source Molecular Corp. The company shall not be liable for any damages, either direct or consequential. Source Molecular Corp. provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact Source Molecular in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.



Laboratory Comments

Negative Results

In sample(s) classified as negative, the human-associated Bacteroidetes gene biomarker was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis. It is important to note that a negative result does not mean that the sample does not definitely have human fecal contamination. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution. In order to strengthen the result, a negative sample should be analyzed further for human fecal contamination with other DNA analytical tests. A list of human fecal ID tests can be found at www.sourcemolecular.com/human.

Positive Results

In sample(s) classified as positive, the human-associated Bacteroidetes gene biomarker(s) was detected in both test replicates suggesting that human fecal contamination is present in the water sample(s). The biomarker(s) serve as an indicator of the targeted fecal pollution, but the presence of the biomarker does not signify conclusively the presence of that form of fecal pollution. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

Human Fecal Reference Samples

The client is encouraged to submit samples from the surrounding wastewater facilities and/or septic systems in order to gain a better understanding of the concentration of the human-associated fecal Bacteroidetes genetic marker as well as the concentration of the general fecal Bacteroidetes genetic marker in the geographic region of interest. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

Each submitted water sample was filtered through 0.45 micron membrane filters. Each filter was placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample was homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol.

Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing the sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. ' All assays were run in duplicate.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and to reveal any false negatives or false positives. The accumulation of PCR product is detected and graphed in an amplification plot. If the fecal indicator organism is absent in the sample, this accumulation is not detected and the sample is considered negative. If accumulation of PCR product is detected, the sample is considered positive.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

Human Bacteroidetes ID™ Species: *B. stercoris*,
Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

¹Boehm, A., Fuhman, J., Mrse, R., Grant, S. **Tiered approach for identification of a human fecal pollution source at a recreational beach: case study at Avalon Bay, Catalina Island, California.** Environ Sci Technol. 2003 37: 673–680.

²Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

³Bernhard, A., Field, K. **A PCR assay to discriminate human and ruminant feces on the basis of host differences in Bacteroides-Prevotella genes encoding 16S rRNA.** Appl. Environ. Microbiol. 2000b 66: 4571-4574.

⁴Ahmed, w., Masters, N., Toze, S. **Consistency in the host specificity and host sensitivity of the Bacteroides HF183 marker for sewage pollution tracking.** Lett. Appl. Microbiol. 2012 55: 283-289.

⁵Scott, T., Rose, J., Jenkins, T., Farrah, S., Lukasik, J. **Microbial Source Tracking: Current Methodology and Future Directions.** Appl. Environ. Microbiol. 2002 68: 5796-5803.

⁶Bernhard, A., Field, K. **Identification of nonpoint sources of fecal pollution in coastal waters by using host-specific 16S ribosomal DNA genetic markers from fecal anaerobes.** Appl. Environ. Microbiol. 2000a 66: 1587-1594.

⁷Fogarty, L., Voytek, M. **A Comparison of Bacteroides-Prevotella 16S rRNA Genetic Markers for Fecal Samples from Different Animal Species.** Appl. Environ. Microbiol. 2005 71: 5999-6007.

⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., et al. **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**

CHAIN OF CUSTODY FORM

W8C300WR

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall 001, 002, 011, 018 Outfall 001 Grab		ANALYSIS REQUIRED A A A R R R R/Q/A A A A MST-Bacteroidales, Human E. coli (SM9221) Settleable Solids Conductivity Oil & Grease (1664-HEM) VOCs + VOCs PP + xylenes, Freon 11, Freon 113, Freon 123A, Cyclohexane, cis-1,2-DCP VOCs (824) - only A+A+2C+E VOCs - gas (GRO)(C4-C12) 8015 - diesel/jet fuel (DRO (C13-C28))		Field Readings Meter serial # Field Readings: (Include units) Time of Readings: 1545 DO 7.51 mg/L pH 6.88 pH unit Temp 9.31 °F TRC 0.02 mg/L Field readings QC Checked by: J.P.N. Date/Time: 1-20-17/1530											
Project Manager: Nancy Gardiner 818.285.7132, 858.337.4061 (cell)		Project Manager: Nancy Gardiner 818.285.7132, 858.337.4061 (cell)		Project Manager: Nancy Gardiner 818.285.7132, 858.337.4061 (cell)		Project Manager: Nancy Gardiner 818.285.7132, 858.337.4061 (cell)											
Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)											
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	MST-Bacteroidales, Human	E. coli (SM9221)	Settleable Solids	Conductivity	Oil & Grease (1664-HEM)	VOCs + VOCs PP + xylenes, Freon 11, Freon 113, Freon 123A, Cyclohexane, cis-1,2-DCP	VOCs (824) - only A+A+2C+E	VOCs - gas (GRO)(C4-C12)	8015 - diesel/jet fuel (DRO (C13-C28))
Outfall 001	Outfall001_20170120_Grab	1/20/2017 1530	WM	125mL Sterile Poly	1	None	5	No	X								
Outfall 001	Outfall001_20170120_Grab_Etra	1/20/2017 1530	WM	125mL Sterile Poly	3	Na2S2O3	10	No									
Trip Blanks	TB-20170120	1/20/2017 1530	WM	1 L Glass Amber	2	HCl	15	No									

These Samples at the Grab Portion of Outfall 001 for this storm event. Composite samples will follow and are to be added to this work order.

Legend: R=Routine, A=Annual, Q=Quarterly

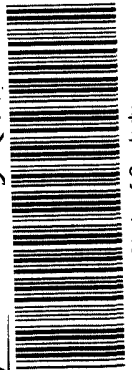
Relinquished By: <i>[Signature]</i>	Date/Time: 1/20/17 17:55	Company: SHAENN	Received By: <i>[Signature]</i>	Date/Time: 1-20-17 17:55
Relinquished By: <i>[Signature]</i>	Date/Time: 1-20-17 18:45	Company: WASTON	Received By: <i>[Signature]</i>	Date/Time: 1-20-17 17:55
Relinquished By: <i>[Signature]</i>	Date/Time: 1-20-17 21:06	Company: D.C.S	Received By: <i>[Signature]</i>	Date/Time: 1/20/17 21:06

Turn-around time: (Check)
 24 Hour: 72 Hour:
 48 Hour: 5 Day: 10 Day:

Sample Integrity: (Check)
 Intact: On Ice:
 Data Requirements: (Check)
 No Level IV: All Level IV:

Store Samples for 6 months.

1278 4/13.8
34/3.6



440-174196 Chain of Custody



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174196-1

Login Number: 174196

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174234-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174234-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170121_Comp	440-174234-1	N/A	Water	1/21/17 11:40 AM	DV-WC-0077, E1613B, E180.1, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E608, E625, 821-R-02-013, SM2340, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5310B, SM5540, SW8260SIM
Outfall001_20170121_Comp_F	440-174234-2	N/A	Water	1/21/17 11:40 AM	E200.7, E200.8, E245.1, SM2340



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174234-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine and TA-Denver.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Samples for hydrazine (Method DV-WC-0077) were transferred to TA-Denver.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was included in the data package.

The following issue was noted:

- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample OUTFALL001_20170121_COMP. The result for total HPCDD was qualified as nondetected (U). The reviewer verified that peaks comprising total



HpCDF in the sample included more peaks than the method blank total. The sample result for total HpCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Reported EMPCs for isomers 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDF, and 1,2,3,7,8-PeCDF were qualified as estimated nondetects (UJ). Totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.7, 200.8, 245.1 AND SM2340— METALS, MERCURY AND HARDNESS

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on March 23, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8, and 245.1*, *Standard Method 2340*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall001_20170121_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 10 days after receipt. All dissolved metals, dissolved mercury and hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall001_20170121_Comp for all methods and Outfall001_20170121_Comp_F for the ICP method. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively, with the exception of recoveries for total antimony (64%/65%), and dissolved iron (131%/144%). Post digestion spike analyses were not performed. The result for total



antimony was qualified as estimated with low potential bias (UJ). The result for dissolved iron was qualified as estimated (J).

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

The ICP Form 7A (LCS), has units listed of mg/L. Some analytes are reported in mg/L and some are reported in µg/L (As, Be, Co, Cr, Mn, Ni, V, An and Ag). The True and Found values for these analytes appear to be 1000x the actual true value. The data reported on the Form 7A is correct as reported in units of µg/L in the raw data. Sample qualification is not required.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

E. Wessling of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.



V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150%. No pesticide qualifications were required. PCB surrogate decachlorobiphenyl (DCB) was recovered below the laboratory control limits of 29-115% at 26%; therefore, all PCB results were qualified as estimated nondetects (UJ). The lab noted that an emulsion formed during preparation which may have contributed to the low recovery.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the site sample of this SDG. All recoveries and RPDs were within laboratory QC limits.

V.4. FIELD QC SAMPLES

MECX^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MECX^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.



VI. EPA METHOD 314.0 — PERCHLORATE

Marcia Hilchey of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on the sample from this SDG. MS/MSD recoveries (123%/124%) were above the control limit of 80-120%. As the sample result was a nondetect, the sample result was not qualified. The MS/MSD RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.



VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^x reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with exceptions noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$, with the exception of the ICV $\%D$ of -34.2 for benzidine, and CCV $\%Ds$ for benzo(b)fluoranthene and benzo(k)fluoranthene of 20.3% and 22.2%, respectively. The sample result for benzidine was subsequently rejected (see Matrix Spike/Matrix Spike Duplicate section), and was not further qualified for the ICV outlier. Results for benzo(b)fluoranthene and benzo(k)fluoranthene, both nondetects, were qualified as estimated (UJ) in sample Outfall001_20170121_Comp.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG, Outfall001_20170121_Comp. Benzidine and 3,3'-dichlorobenzidine were not recovered in the MS or MSD. The nondetect results for both compounds were rejected (R) in sample Outfall001_20170121_Comp. Target compound n-nitrosodiphenylamine was recovered below the control limits of 60-120% in both the MS and MSD, at 15% and 39%, respectively. The nondetect result for n-nitrosodiphenylamine was qualified as estimated (UJ). Target compound 1,2-diphenylhydrazine was recovered below the control limits of 60-120% in the MS only. Qualifications were not assigned for the single outlier. RPDs for 1,2-diphenylhydrazine and n-nitrosodiphenylamine exceeded the control limit of $\leq 25\%$ at 34% and 86%, respectively; however, as neither compound was detected in the parent sample, qualifications were not assigned.



VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 925 milliliters was less than the nominal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHOD 8260B SIM—1,4-DIOXANE

L. Calvin of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 8260B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VIII.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.



VIII.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRF and the ICV and continuing calibration RRFs were ≥ 0.05 for 1,4-dioxane. The initial calibration %RSD was $\leq 15\%$. The second source ICV and CCV %Ds were within the control limit of $\leq 20\%$.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compound 1,4-dioxane was not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the laboratory control limits.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

VIII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VIII.4.1. TRIP BLANKS

A trip blank was not identified for this SDG.

VIII.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standard: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^x reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1, 218.6, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, 5310B, and 5540C, hydrazine by DV-WC-0077, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IX.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for hydrazine analysis past the 48 hour holding time for sample filtration and acidification. The sample was received at the laboratory past the 24 hour holding time for hexavalent chromium. Turbidity was analyzed four hours and 15 minutes past the 48 hour holding time requirement. MBAS was analyzed three hours and 13 minutes past the 48 hour holding time requirement. Nitrate as N and nitrite as N were analyzed 23 minutes past the 48 hour holding time requirement. Results for hydrazine, MBAS, hexavalent chromium, and nitrite as N were qualified as estimated (UJ). Results for turbidity, nitrate as N and nitrite/nitrate were qualified as estimated (J). Chronic toxicity was analyzed 14 hours and 39 minutes past the 36 hour holding time requirement. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate
- 28 Days for TOC
- 48 hours for BOD

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by



the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

IX.3.2. LABORATORY CONTROL SAMPLES/LABORATORY CONTROL SAMPLE DUPLICATES

LCS/LCSD recoveries and RPDs were within the laboratory control limits.

IX.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were within the control limits of $\leq 20\%$ RPD.

IX.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD recoveries and RPDs were within the control limits of 70-130% and $\leq 20\%$, respectively.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No raw data was presented in the SDG for the turbidity, BOD, TDS and TSS analyses.

IX.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401742341

Analysis Method DV-WC-0077

Sample Name Outfall001_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:40:00 AM Validation Level: 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Methyl hydrazine	N	60-34-4	ND	10	0.25	ug/L	UBU	UJ	H

Analysis Method E1613B

Sample Name Outfall001_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:40:00 AM Validation Level: 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000031	0.000095	0.00000045	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00029	0.000095	0.00000062	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000024	0.000048	0.00000055	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000037	0.000048	0.00000079	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000023	0.000048	0.00000065	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000022	0.000048	0.00000075	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000015	0.000048	0.00000047	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000024	0.000048	0.00000072	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000032	0.000048	0.00000049	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000016	0.000048	0.00000051	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000023	0.000048	0.00000040	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000012	0.000048	0.00000053	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000048	0.00000085	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000022	0.000048	0.00000057	ug/L	J,DX	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000048	0.00000055	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000010	0.000095	0.00000037	ug/L	J,DX	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000095	0.0000012	ug/L	U	U	

Analysis Method E1613B

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.0000095	0.00000052	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000041	0.000048	0.00000060	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000077	0.000077	0.00000079	ug/L	MB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000022	0.000048	0.00000064	ug/L	J,DXq	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000015	0.000048	0.00000045	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000029	0.000048	0.00000054	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000048	0.00000085	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000023	0.0000095	0.00000037	ug/L	J,DXq	J	DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000095	0.00000052	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	350	4.0	1.6	NTU	BU	J	H

Analysis Method E200.7

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Barium	T	7440-39-3	0.11	0.010	0.0050	mg/L			
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.049	0.050	0.025	mg/L	J,DX	J	DNQ
Chromium	T	7440-47-3	18	5.0	2.5	ug/L			
Cobalt	T	7440-48-4	4.8	10	2.5	ug/L	J,DX	J	DNQ
Iron	T	7439-89-6	18	0.10	0.050	mg/L			
Manganese	T	7439-96-5	300	20	10	ug/L			
Nickel	T	7440-02-0	13	10	5.0	ug/L			
Vanadium	T	7440-62-2	33	10	5.0	ug/L			
Zinc	T	7440-66-6	59	20	10	ug/L			

Analysis Method E200.7**Sample Name** Outfall001_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Barium	D	7440-39-3	0.019	0.010	0.0050	mg/L	QP	J	H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Boron	D	7440-42-8	0.031	0.050	0.025	mg/L	J,DXQP	J	DNQ,H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Cobalt	D	7440-48-4	ND	10	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	1.1	0.10	0.050	mg/L	QP	J	H,Q
Manganese	D	7439-96-5	13	20	10	ug/L	J,DXQP	J	DNQ,H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	UJ	Q
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	11	2.0	0.50	ug/L			
Lead	T	7439-92-1	8.6	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall001_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	3.6	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	0.58	1.0	0.50	ug/L	J,DXQP	J	DNQ,H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	UBUBVIB	UJ	H

Analysis Method E245.1**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall001_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.8	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrate (as N)	N	14797-55-8	1.4	0.11	0.055	mg/L	BU	J	H
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	UBU	UJ	H
Nitrite/Nitrate	N	NO2NO3	1.4	0.15	0.070	mg/L	BU	J	H
Sulfate	N	14808-79-8	3.3	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0048	0.0038	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0048	0.0029	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.0096	0.0038	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0048	0.0014	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0048	0.0024	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.48	0.24	ug/L	U	UJ	S
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.48	0.24	ug/L	U	UJ	S
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.48	0.24	ug/L	U	UJ	S
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.48	0.24	ug/L	U	UJ	S
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.48	0.24	ug/L	U	UJ	S
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.48	0.24	ug/L	U	UJ	S
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.48	0.24	ug/L	U	UJ	S
beta-BHC	N	319-85-7	ND	0.0096	0.0038	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.096	0.077	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0048	0.0034	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0048	0.0019	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0048	0.0029	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0048	0.0019	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.0096	0.0029	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0048	0.0019	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.0096	0.0019	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.0096	0.0029	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.0096	0.0029	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0048	0.0024	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.48	0.24	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	1.08	0.541	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.541	0.216	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	1.08	0.541	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.541	0.216	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.541	0.216	ug/L	U	U	

Analysis Method E625

2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.541	0.216	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	1.08	0.541	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	2.16	1.08	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	2.16	1.08	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	5.41	2.16	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.41	2.16	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2	ND	5.41	2.16	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	ND	0.541	0.216	ug/L	U	U	
2-Chlorophenol	N	95-57-8	ND	1.08	0.541	ug/L	U	U	
2-Nitrophenol	N	88-75-5	ND	2.16	1.08	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.41	2.16	ug/L	U	R	Q
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	5.41	2.16	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3	ND	1.08	0.541	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	ND	2.16	0.216	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.541	0.216	ug/L	U	U	
4-Nitrophenol	N	100-02-7	ND	5.41	2.16	ug/L	U	U	
Acenaphthene	N	83-32-9	ND	0.541	0.216	ug/L	U	U	
Acenaphthylene	N	208-96-8	ND	0.541	0.216	ug/L	U	U	
Anthracene	N	120-12-7	ND	0.541	0.216	ug/L	U	U	
Benzidine	N	92-87-5	ND	10.8	5.41	ug/L	U	R	Q
Benzo(a)anthracene	N	56-55-3	ND	5.41	2.16	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	ND	2.16	0.541	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2	ND	2.16	1.08	ug/L	U	UJ	C
Benzo(g,h,i)perylene	N	191-24-2	ND	5.41	2.16	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9	ND	0.541	0.270	ug/L	U	UJ	C
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.541	0.216	ug/L	U	U	
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.541	0.216	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.41	2.16	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	ND	5.41	2.16	ug/L	U	U	
Chrysene	N	218-01-9	ND	0.541	0.216	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	ND	0.541	0.270	ug/L	U	U	
Diethyl phthalate	N	84-66-2	ND	1.08	0.541	ug/L	U	U	
Dimethyl phthalate	N	131-11-3	ND	0.541	0.270	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2	ND	2.16	1.08	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0	ND	5.41	2.16	ug/L	U	U	
Fluoranthene	N	206-44-0	ND	0.541	0.216	ug/L	U	U	
Fluorene	N	86-73-7	ND	0.541	0.216	ug/L	U	U	
Hexachlorobenzene	N	118-74-1	ND	1.08	0.541	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3	ND	2.16	0.541	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4	ND	5.41	2.16	ug/L	U	U	
Hexachloroethane	N	67-72-1	ND	3.24	0.541	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	2.16	1.08	ug/L	U	U	
Isophorone	N	78-59-1	ND	1.08	0.541	ug/L	U	U	

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Naphthalene	N	91-20-3	ND	1.08	0.541	ug/L	U	U	
Nitrobenzene	N	98-95-3	ND	1.08	0.541	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	2.16	1.08	ug/L	U	U	
N-Nitrosodi-n-propylamine	N	621-64-7	ND	2.16	1.08	ug/L	U	U	
N-Nitrosodiphenylamine	N	86-30-6	ND	1.08	0.541	ug/L	U	UJ	Q
Pentachlorophenol	N	87-86-5	ND	2.16	1.08	ug/L	U	U	
Phenanthrene	N	85-01-8	ND	0.541	0.216	ug/L	U	U	
Phenol	N	108-95-2	ND	1.08	0.541	ug/L	U	U	
Pyrene	N	129-00-0	ND	0.541	0.216	ug/L	U	U	

Analysis Method EPA-821-R-02-013

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	33.36			% SURV		J	H

Analysis Method SM2340

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	50	0.33	0.17	mg/L			

Sample Name Outfall001_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	27	0.33	0.17	mg/L		J	H

Analysis Method SM2540C

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	260	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	110	10	5.0	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method SM5210B

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD)	N	BOD	2.7	2.0	0.50	mg/L			

Analysis Method SM5310B

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	11	1.0	0.65	mg/L			

Analysis Method *SM5540*

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	ND	0.10	0.050	mg/L	UBU	UJ	H

Analysis Method *SW8260SIM*

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,4-Dioxane	N	123-91-1	ND	2.0	0.50	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174234-1

Client Project/Site: Annual Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/16/2017 10:32:30 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/16/2017 10:32:30 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174234-1	Outfall001_20170121_Comp	Water	01/21/17 11:40	01/22/17 04:15
440-174234-2	Outfall001_20170121_Comp_F	Water	01/21/17 11:40	01/22/17 04:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Job ID: 440-174234-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174234-1

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 1.3° C, 1.4° C, 1.4° C, 1.4° C, 1.5° C, 1.7° C and 1.9° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-384955 recovered above the upper control limit for benzo(b)fluoranthene and benzo(k)fluoranthene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries of 3,3'-dichlorobenzidine for preparation batch 440-384349 and analytical batch 440-384955 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-384349 and analytical batch 440-384955 was outside control limits for N-nitrosodiphenylamine and 1,2-diphenylhydrazine. Sample matrix interference is suspected.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries of benzidine for preparation batch 440-384349 and analytical batch 440-385461 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: The following samples were analyzed outside of analytical holding time for Nitrate as N and Nitrite as N due to analyst oversight (samples received over the weekend): Outfall001_20170121_Comp (440-174234-1), Outfall001_20170121_Comp (440-174234-1[MS]) and Outfall001_20170121_Comp (440-174234-1[MSD]).

Method(s) 218.6: The continuing calibration verification (CCV) associated with batch 440-383776 recovered above the upper control limit for hexavalent chromium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 218.6: The following sample was received outside of holding time: Outfall001_20170121_Comp (440-174234-1).

Method(s) NO3NO2 Calc: The following sample was analyzed outside of analytical holding time for Nitrate Nitrite as N due to analyst oversight (samples received over the weekend): Outfall001_20170121_Comp (440-174234-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Surrogate recovery for the following samples was outside control limits: Outfall001_20170121_Comp (440-174234-1).

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Job ID: 440-174234-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed. (Emulsion during extraction procedure),

Method(s) 608, 8082: Surrogate recovery for the following samples was outside control limits: Outfall001_20170121_Comp (440-174234-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed. (Emulsion during the extraction procedure),

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 200.7 Rev 4.4: The initial calibration verification (ICV) result for batch 440-385338 was above the upper control limit for Arsenic. Sample results were non-detects, and have been reported as qualified data.

Method(s) 200.8: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-384922 and analytical batch 440-385495 were outside control limits for Antimony. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-385801 and 440-386036 and analytical batch 440-386369 were outside control limits for Iron. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) Filtration: The following sample was prepared outside of preparation holding time: Outfall001_20170121_Comp (440-174234-1). The samples were received in Irvine on a Friday too late to ship to Denver for Saturday delivery and were held through the weekend, such that the preservation holding time was expired. Hydrazines by IC, DV-WC-0077, preparation batch 280-360047.

Method(s) 180.1: The following sample was analyzed outside of analytical holding time due to employee oversight.: Outfall001_20170121_Comp (440-174234-1).

Method(s) SM 5540C: The following sample was analyzed outside of analytical holding time due to miscommunication with the lab: Outfall001_20170121_Comp (440-174234-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

Method Source Molecular-Human Bacteroidales: This method was subcontracted to TestAmerica Irvine. The subcontract laboratory certification is different from that of the facility issuing the final report.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			02/01/17 03:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	88		80 - 120					02/01/17 03:08	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Acenaphthylene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Anthracene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Benzidine	ND		10.8	5.41	ug/L		01/25/17 13:07	01/31/17 14:50	1
Benzo[a]anthracene	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
Benzo[b]fluoranthene	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
Benzo[k]fluoranthene	ND		0.541	0.270	ug/L		01/25/17 13:07	01/27/17 22:46	1
Benzo[a]pyrene	ND		2.16	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Bis(2-chloroethoxy)methane	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Bis(2-chloroethyl)ether	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Bis(2-ethylhexyl) phthalate	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
4-Bromophenyl phenyl ether	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Butyl benzyl phthalate	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
4-Chloro-3-methylphenol	ND		2.16	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
2-Chloronaphthalene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
2-Chlorophenol	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
4-Chlorophenyl phenyl ether	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Chrysene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Dibenz(a,h)anthracene	ND		0.541	0.270	ug/L		01/25/17 13:07	01/27/17 22:46	1
Di-n-butyl phthalate	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
1,2-Dichlorobenzene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
1,3-Dichlorobenzene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
1,4-Dichlorobenzene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
3,3'-Dichlorobenzidine	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
2,4-Dichlorophenol	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
Diethyl phthalate	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
2,4-Dimethylphenol	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
Dimethyl phthalate	ND		0.541	0.270	ug/L		01/25/17 13:07	01/27/17 22:46	1
4,6-Dinitro-2-methylphenol	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
2,4-Dinitrophenol	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
2,4-Dinitrotoluene	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
2,6-Dinitrotoluene	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
Di-n-octyl phthalate	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Fluoranthene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Fluorene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Hexachlorobenzene	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Hexachlorobutadiene	ND		2.16	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Hexachloroethane	ND		3.24	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Hexachlorocyclopentadiene	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
Indeno[1,2,3-cd]pyrene	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
Isophorone	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Nitrobenzene	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
2-Nitrophenol	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
4-Nitrophenol	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
N-Nitrosodimethylamine	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
N-Nitrosodiphenylamine	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
N-Nitrosodi-n-propylamine	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
Pentachlorophenol	ND		2.16	1.08	ug/L		01/25/17 13:07	01/27/17 22:46	1
Phenanthrene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Phenol	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Pyrene	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
1,2,4-Trichlorobenzene	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
2,4,6-Trichlorophenol	ND		1.08	0.541	ug/L		01/25/17 13:07	01/27/17 22:46	1
Benzo[g,h,i]perylene	ND		5.41	2.16	ug/L		01/25/17 13:07	01/27/17 22:46	1
bis (2-chloroisopropyl) ether	ND		0.541	0.216	ug/L		01/25/17 13:07	01/27/17 22:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	69		50 - 120				01/25/17 13:07	01/27/17 22:46	1
2-Fluorophenol	58		30 - 120				01/25/17 13:07	01/27/17 22:46	1
2,4,6-Tribromophenol	67		40 - 120				01/25/17 13:07	01/27/17 22:46	1
Nitrobenzene-d5	68		45 - 120				01/25/17 13:07	01/27/17 22:46	1
Terphenyl-d14	37		37 - 144				01/25/17 13:07	01/27/17 22:46	1
Phenol-d6	63		35 - 120				01/25/17 13:07	01/27/17 22:46	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Aroclor 1221	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Aroclor 1232	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Aroclor 1242	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Aroclor 1248	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Aroclor 1254	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Aroclor 1260	ND		0.48	0.24	ug/L		01/23/17 07:27	01/24/17 21:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	26	LG	29 - 115				01/23/17 07:27	01/24/17 21:31	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0048	0.0014	ug/L		01/23/17 07:27	01/23/17 19:09	1
alpha-BHC	ND		0.0048	0.0024	ug/L		01/23/17 07:27	01/23/17 19:09	1
beta-BHC	ND		0.0096	0.0038	ug/L		01/23/17 07:27	01/23/17 19:09	1
Chlordane (technical)	ND		0.096	0.077	ug/L		01/23/17 07:27	01/23/17 19:09	1
delta-BHC	ND		0.0048	0.0034	ug/L		01/23/17 07:27	01/23/17 19:09	1
Dieldrin	ND		0.0048	0.0019	ug/L		01/23/17 07:27	01/23/17 19:09	1
Endosulfan I	ND		0.0048	0.0029	ug/L		01/23/17 07:27	01/23/17 19:09	1
Endosulfan II	ND		0.0048	0.0019	ug/L		01/23/17 07:27	01/23/17 19:09	1
Endosulfan sulfate	ND		0.0096	0.0029	ug/L		01/23/17 07:27	01/23/17 19:09	1
Endrin	ND		0.0048	0.0019	ug/L		01/23/17 07:27	01/23/17 19:09	1
Endrin aldehyde	ND		0.0096	0.0019	ug/L		01/23/17 07:27	01/23/17 19:09	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.0096	0.0029	ug/L		01/23/17 07:27	01/23/17 19:09	1
Heptachlor	ND		0.0096	0.0029	ug/L		01/23/17 07:27	01/23/17 19:09	1
Heptachlor epoxide	ND		0.0048	0.0024	ug/L		01/23/17 07:27	01/23/17 19:09	1
Toxaphene	ND		0.48	0.24	ug/L		01/23/17 07:27	01/23/17 19:09	1
4,4'-DDD	ND		0.0048	0.0038	ug/L		01/23/17 07:27	01/23/17 19:09	1
4,4'-DDE	ND		0.0048	0.0029	ug/L		01/23/17 07:27	01/23/17 19:09	1
4,4'-DDT	ND		0.0096	0.0038	ug/L		01/23/17 07:27	01/23/17 19:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	61		10 - 150	01/23/17 07:27	01/23/17 19:09	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND	BU BV IB	1.0	0.25	ug/L			01/23/17 12:17	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.8		0.50	0.25	mg/L			01/23/17 12:03	1
Nitrate as N	1.4	BU	0.11	0.055	mg/L			01/23/17 12:03	1
Fluoride	ND		0.50	0.25	mg/L			01/23/17 12:03	1
Nitrite as N	ND	BU	0.15	0.070	mg/L			01/23/17 12:03	1
Sulfate	3.3		0.50	0.25	mg/L			01/23/17 12:03	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 10:00	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.4	BU	0.15	0.070	mg/L			01/30/17 15:05	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000095	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,7,8-PeCDD	ND		0.000048	0.0000008	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,7,8-PeCDF	0.0000012	J,DX q	0.000048	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
2,3,4,7,8-PeCDF	ND		0.000048	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,4,7,8-HxCDD	0.0000015	J,DX q	0.000048	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,6,7,8-HxCDD	0.0000032	J,DX	0.000048	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,7,8,9-HxCDD	0.0000023	J,DX	0.000048	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,4,7,8-HxCDF	0.0000022	J,DX	0.000048	0.0000007	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,6,7,8-HxCDF	0.0000024	J,DX q	0.000048	0.0000007	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,7,8,9-HxCDF	0.0000016	J,DX	0.000048	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	0.000022	J,DX	0.000048	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,4,6,7,8-HpCDD	0.000037	J,DX MB	0.000048	0.0000007	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,4,6,7,8-HpCDF	0.000024	J,DX MB	0.000048	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
1,2,3,4,7,8,9-HpCDF	0.000023	J,DX q MB	0.000048	0.0000006	ug/L		01/26/17 08:49	01/28/17 09:02	1
OCDD	0.00029	MB	0.000095	0.0000006	ug/L		01/26/17 08:49	01/28/17 09:02	1
OCDF	0.000031	J,DX MB	0.000095	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total TCDD	ND		0.000095	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total TCDF	0.000023	J,DX q	0.000095	0.0000003	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total PeCDD	ND		0.000048	0.0000008	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total PeCDF	0.000029	J,DX q	0.000048	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total HxCDD	0.000015	J,DX q	0.000048	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total HxCDF	0.000022	J,DX q	0.000048	0.0000006	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total HpCDD	0.000077	MB	0.000048	0.0000007	ug/L		01/26/17 08:49	01/28/17 09:02	1
Total HpCDF	0.000041	J,DX q MB	0.000048	0.0000006	ug/L		01/26/17 08:49	01/28/17 09:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	67		25 - 164	01/26/17 08:49	01/28/17 09:02	1
13C-2,3,7,8-TCDF	59		24 - 169	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,7,8-PeCDD	68		25 - 181	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,7,8-PeCDF	60		24 - 185	01/26/17 08:49	01/28/17 09:02	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,4,7,8-HxCDD	71		32 - 141	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,6,7,8-HxCDD	69		28 - 130	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,4,7,8-HxCDF	61		26 - 152	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,6,7,8-HxCDF	57		26 - 123	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147	01/26/17 08:49	01/28/17 09:02	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,4,6,7,8-HpCDD	79		23 - 140	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,4,6,7,8-HpCDF	70		28 - 143	01/26/17 08:49	01/28/17 09:02	1
13C-1,2,3,4,7,8,9-HpCDF	75		26 - 138	01/26/17 08:49	01/28/17 09:02	1
13C-OCDD	92		17 - 157	01/26/17 08:49	01/28/17 09:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	01/26/17 08:49	01/28/17 09:02	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000095	0.0000012	ug/L		01/26/17 08:49	01/30/17 17:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	55		24 - 169	01/26/17 08:49	01/30/17 17:11	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	86		35 - 197	01/26/17 08:49	01/30/17 17:11	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		01/27/17 14:54	01/30/17 17:23	1
Boron	0.049	J,DX	0.050	0.025	mg/L		01/27/17 14:54	01/30/17 17:23	1
Barium	0.11		0.010	0.0050	mg/L		01/27/17 14:54	01/30/17 17:23	1
Beryllium	ND		2.0	1.0	ug/L		01/27/17 14:54	01/30/17 17:23	1
Cobalt	4.8	J,DX	10	2.5	ug/L		01/27/17 14:54	01/30/17 17:23	1
Chromium	18		5.0	2.5	ug/L		01/27/17 14:54	01/30/17 17:23	1
Iron	18		0.10	0.050	mg/L		01/27/17 14:54	01/30/17 17:23	1
Manganese	300		20	10	ug/L		01/27/17 14:54	01/30/17 17:23	1
Nickel	13		10	5.0	ug/L		01/27/17 14:54	01/30/17 17:23	1
Vanadium	33		10	5.0	ug/L		01/27/17 14:54	01/30/17 17:23	1
Zinc	59		20	10	ug/L		01/27/17 14:54	01/30/17 17:23	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/27/17 14:56	01/31/17 11:52	1
Copper	11		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:52	1
Lead	8.6		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:52	1
Antimony	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:52	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:52	1
Thallium	ND		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:52	1
Silver	ND		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:52	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:19	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	50		0.33	0.17	mg/L			02/02/17 13:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	350	BU	4.0	1.6	NTU			01/23/17 15:55	40
Monomethyl Hydrazine	ND	BU	10	0.25	ug/L		01/25/17 20:22	02/04/17 02:45	1
Total Dissolved Solids	260		10	5.0	mg/L			01/26/17 08:21	1
Total Suspended Solids	110		10	5.0	mg/L			01/26/17 18:10	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:17	1
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 13:45	1
Total Organic Carbon	11		1.0	0.65	mg/L			01/24/17 13:27	1
Methylene Blue Active Substances	ND	BU	0.10	0.050	mg/L			01/23/17 14:53	1
Biochemical Oxygen Demand	2.7		2.0	0.50	mg/L			01/22/17 10:00	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp_F

Lab Sample ID: 440-174234-2

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		02/02/17 10:06	02/03/17 11:30	1
Boron	0.031	J,DX QP	0.050	0.025	mg/L		02/02/17 10:06	02/03/17 11:30	1
Barium	0.019	QP	0.010	0.0050	mg/L		02/02/17 10:06	02/03/17 11:30	1
Beryllium	ND	QP	2.0	1.0	ug/L		02/02/17 10:06	02/03/17 11:30	1
Cobalt	ND	QP	10	2.5	ug/L		02/02/17 10:06	02/03/17 11:30	1
Chromium	ND	QP	5.0	2.5	ug/L		02/02/17 10:06	02/03/17 11:30	1
Iron	1.1	QP	0.10	0.050	mg/L		02/02/17 10:06	02/03/17 11:30	1
Manganese	13	J,DX QP	20	10	ug/L		02/02/17 10:06	02/03/17 11:30	1
Nickel	ND	QP	10	5.0	ug/L		02/02/17 10:06	02/03/17 11:30	1
Vanadium	ND	QP	10	5.0	ug/L		02/02/17 10:06	02/03/17 11:30	1
Zinc	ND	QP	20	10	ug/L		02/02/17 10:06	02/03/17 11:30	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/02/17 10:08	02/03/17 16:16	1
Copper	3.6	QP	2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:16	1
Lead	0.58	J,DX QP	1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:16	1
Antimony	ND	QP	2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:16	1
Selenium	ND	QP	2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:16	1
Thallium	ND	QP	1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:16	1
Silver	ND	QP	1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:16	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/01/17 23:48	02/02/17 21:02	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	27		0.33	0.17	mg/L			02/06/17 01:36	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method	Method Description	Protocol	Laboratory
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
DV-WC-0077	Hydrazine, Ion Chromatography	TAL-DEN	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	10 mL	10 mL	385626	02/01/17 03:08	GK	TAL IRV
Total/NA	Prep	625			925 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			384955	01/27/17 22:46	DF	TAL IRV
Total/NA	Prep	625			925 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			385461	01/31/17 14:50	DF	TAL IRV
Total/NA	Prep	608			1040 mL	2 mL	383738	01/23/17 07:27	L2A	TAL IRV
Total/NA	Analysis	608 PCB LL		1			384014	01/24/17 21:31	JM	TAL IRV
Total/NA	Prep	608			1040 mL	2 mL	383738	01/23/17 07:27	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			383608	01/23/17 19:09	KS	TAL IRV
Total/NA	Analysis	218.6		1			383776	01/23/17 12:17	MN	TAL IRV
Total/NA	Analysis	300.0		1			383773	01/23/17 12:03	NTN	TAL IRV
Total/NA	Analysis	300.0		1			383774	01/23/17 12:03	NTN	TAL IRV
Total/NA	Analysis	314.0		1			383992	01/24/17 10:00	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385262	01/30/17 15:05	NN	TAL IRV
Total/NA	Prep	1613B			1051.3 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 09:02	SMA	TAL SAC
Total/NA	Prep	1613B	RA		1051.3 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 17:11	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	384921	01/27/17 14:54	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			385338	01/30/17 17:23	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	384922	01/27/17 14:56	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			385495	01/31/17 11:52	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384111	01/24/17 14:19	DB	TAL IRV
Total/NA	Analysis	245.1		1			384220	01/24/17 21:19	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			386100	02/02/17 13:27	A1S	TAL IRV
Total/NA	Analysis	180.1		40			383844	01/23/17 15:55	ST	TAL IRV
Total/NA	Prep	Filtration			30 mL	30 mL	360047	01/25/17 20:22	MPS	TAL DEN
Total/NA	Analysis	DV-WC-0077		1	4.5 mL	5 mL	361024	02/04/17 02:45	MPS	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384518	01/26/17 08:21	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	100 mL	1000 mL	384715	01/26/17 18:10	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	383875	01/23/17 14:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384201	01/24/17 19:17	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	384964	01/27/17 13:45	EN	TAL IRV
Total/NA	Analysis	SM 5310B		1			384224	01/24/17 13:27	YZ	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	383876	01/23/17 14:53	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			383675	01/22/17 10:00	XL	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Client Sample ID: Outfall001_20170121_Comp_F

Lab Sample ID: 440-174234-2

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385801	02/01/17 14:42	Q1N	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	386036	02/02/17 10:06	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			386369	02/03/17 11:30	VS	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385801	02/01/17 14:42	Q1N	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	386038	02/02/17 10:08	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386382	02/03/17 16:16	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385801	02/01/17 14:42	Q1N	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	385922	02/01/17 23:48	DB	TAL IRV
Dissolved	Analysis	245.1		1			386411	02/02/17 21:02	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			386100	02/06/17 01:36	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-385626/2
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/31/17 22:07	1
Surrogate	%Recovery	MB Qualifier	Limits			D	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	83		80 - 120					01/31/17 22:07	1

Lab Sample ID: LCS 440-385626/3
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	8.66		ug/L		87	70 - 125
Surrogate	%Recovery	LCS Qualifier	Limits			D	%Rec. Limits
Dibromofluoromethane (Surr)	85		80 - 120				

Lab Sample ID: 440-174317-Y-1 MS
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	9.08		ug/L		91	70 - 130
Surrogate	%Recovery	MS Qualifier	Limits			D	%Rec	%Rec. Limits	
Dibromofluoromethane (Surr)	87		80 - 120						

Lab Sample ID: 440-174317-Y-1 MSD
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	9.17		ug/L		92	70 - 130	1	30
Surrogate	%Recovery	MSD Qualifier	Limits			D	%Rec	%Rec. Limits	RPD	RPD Limit	
Dibromofluoromethane (Surr)	89		80 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Anthracene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Chrysene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Fluoranthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Fluorene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Isophorone	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Naphthalene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Phenanthrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Phenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pyrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		50 - 120	01/25/17 13:07	01/27/17 18:46	1
2-Fluorophenol	63		30 - 120	01/25/17 13:07	01/27/17 18:46	1
2,4,6-Tribromophenol	61		40 - 120	01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene-d5	74		45 - 120	01/25/17 13:07	01/27/17 18:46	1
Terphenyl-d14	84		37 - 144	01/25/17 13:07	01/27/17 18:46	1
Phenol-d6	60		35 - 120	01/25/17 13:07	01/27/17 18:46	1

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzdine	ND		10.0	5.00	ug/L		01/25/17 13:07	01/31/17 11:36	1

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	8.699		ug/L		87	47 - 145
Acenaphthylene	10.0	8.792		ug/L		88	33 - 145
Anthracene	10.0	9.061		ug/L		91	27 - 133
Benzo[a]anthracene	10.0	9.405		ug/L		94	33 - 143
Benzo[b]fluoranthene	10.0	10.13		ug/L		101	24 - 150
Benzo[k]fluoranthene	10.0	10.30		ug/L		103	11 - 150
Benzo[a]pyrene	10.0	9.474		ug/L		95	17 - 150
Bis(2-chloroethoxy)methane	10.0	8.683		ug/L		87	33 - 150
Bis(2-chloroethyl)ether	10.0	8.118		ug/L		81	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	9.786		ug/L		98	10 - 150
4-Bromophenyl phenyl ether	10.0	9.113		ug/L		91	53 - 127
Butyl benzyl phthalate	10.0	9.813		ug/L		98	10 - 150
4-Chloro-3-methylphenol	10.0	8.756		ug/L		88	22 - 147
2-Chloronaphthalene	10.0	8.439		ug/L		84	60 - 118
2-Chlorophenol	10.0	7.747		ug/L		77	23 - 134
4-Chlorophenyl phenyl ether	10.0	8.705		ug/L		87	25 - 150
Chrysene	10.0	9.279		ug/L		93	17 - 150
Dibenz(a,h)anthracene	10.0	8.943		ug/L		89	10 - 150
Di-n-butyl phthalate	10.0	9.604		ug/L		96	10 - 118
1,2-Dichlorobenzene	10.0	7.170		ug/L		72	32 - 129
1,3-Dichlorobenzene	10.0	7.006		ug/L		70	10 - 150
1,4-Dichlorobenzene	10.0	6.948		ug/L		69	20 - 124
3,3'-Dichlorobenzidine	10.0	7.184		ug/L		72	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	10.0	8.406		ug/L		84	39 - 135
Diethyl phthalate	10.0	9.214		ug/L		92	10 - 114
2,4-Dimethylphenol	10.0	7.287		ug/L		73	32 - 119
Dimethyl phthalate	10.0	9.256		ug/L		93	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.77		ug/L		84	10 - 150
2,4-Dinitrophenol	20.0	16.45		ug/L		82	50 - 150
2,4-Dinitrotoluene	10.0	8.982		ug/L		90	39 - 139
2,6-Dinitrotoluene	10.0	9.127		ug/L		91	50 - 150
Di-n-octyl phthalate	10.0	9.560		ug/L		96	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	9.133		ug/L		90	47 - 116
Fluoranthene	10.0	9.346		ug/L		93	26 - 137
Fluorene	10.0	8.966		ug/L		90	59 - 121
Hexachlorobenzene	10.0	8.727		ug/L		87	10 - 150
Hexachlorobutadiene	10.0	7.138		ug/L		71	24 - 116
Hexachloroethane	10.0	6.722		ug/L		67	40 - 113
Hexachlorocyclopentadiene	10.0	3.657	J,DX	ug/L		37	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	8.746		ug/L		87	10 - 150
Isophorone	10.0	8.847		ug/L		88	21 - 150
Naphthalene	10.0	7.924		ug/L		79	21 - 133
Nitrobenzene	10.0	8.346		ug/L		83	35 - 150
2-Nitrophenol	10.0	8.193		ug/L		82	29 - 150
4-Nitrophenol	20.0	17.82		ug/L		89	10 - 132
N-Nitrosodimethylamine	10.0	7.600		ug/L		76	26 - 117
N-Nitrosodiphenylamine	10.0	7.969		ug/L		80	54 - 110
N-Nitrosodi-n-propylamine	10.0	8.502		ug/L		85	10 - 150
Pentachlorophenol	20.0	17.38		ug/L		87	14 - 150
Phenanthrene	10.0	9.043		ug/L		90	54 - 120
Phenol	10.0	7.992		ug/L		80	10 - 112
Pyrene	10.0	9.129		ug/L		91	52 - 115
1,2,4-Trichlorobenzene	10.0	7.466		ug/L		75	44 - 142
2,4,6-Trichlorophenol	10.0	9.411		ug/L		94	37 - 144
Benzo[g,h,i]perylene	10.0	8.816		ug/L		88	10 - 150
bis (2-chloroisopropyl) ether	10.0	7.991		ug/L		80	47 - 103

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	84		50 - 120
2-Fluorophenol	74		30 - 120
2,4,6-Tribromophenol	91		40 - 120
Nitrobenzene-d5	83		45 - 120
Terphenyl-d14	94		37 - 144
Phenol-d6	81		35 - 120

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzidine	10.0	6.553	J,DX	ug/L		66	5 - 66

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	ND		11.0	8.155		ug/L		74	47 - 145
Acenaphthylene	ND		11.0	8.194		ug/L		75	33 - 145
Anthracene	ND		11.0	7.113		ug/L		65	27 - 133
Benzo[a]anthracene	ND		11.0	6.634		ug/L		60	33 - 143
Benzo[b]fluoranthene	ND		11.0	6.747		ug/L		61	24 - 150
Benzo[k]fluoranthene	ND		11.0	6.533		ug/L		59	11 - 150
Benzo[a]pyrene	ND		11.0	6.312		ug/L		57	17 - 150
Bis(2-chloroethoxy)methane	ND		11.0	7.996		ug/L		73	33 - 150
Bis(2-chloroethyl)ether	ND		11.0	8.029		ug/L		73	12 - 150
Bis(2-ethylhexyl) phthalate	ND		11.0	8.458		ug/L		77	10 - 150
4-Bromophenyl phenyl ether	ND		11.0	8.159		ug/L		74	53 - 127
Butyl benzyl phthalate	ND		11.0	9.260		ug/L		84	10 - 150
4-Chloro-3-methylphenol	ND		11.0	8.797		ug/L		80	22 - 147
2-Chloronaphthalene	ND		11.0	8.007		ug/L		73	60 - 118
2-Chlorophenol	ND		11.0	7.816		ug/L		71	23 - 134
4-Chlorophenyl phenyl ether	ND		11.0	8.220		ug/L		75	25 - 150
Chrysene	ND		11.0	6.509		ug/L		59	17 - 150
Dibenz(a,h)anthracene	ND		11.0	6.257		ug/L		57	10 - 150
Di-n-butyl phthalate	ND		11.0	8.799		ug/L		80	10 - 118
1,2-Dichlorobenzene	ND		11.0	6.550		ug/L		60	32 - 129
1,3-Dichlorobenzene	ND		11.0	6.093		ug/L		55	10 - 150
1,4-Dichlorobenzene	ND		11.0	6.220		ug/L		57	20 - 124
3,3'-Dichlorobenzidine	ND		11.0	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		11.0	8.234		ug/L		75	39 - 135
Diethyl phthalate	ND		11.0	9.264		ug/L		84	10 - 114
2,4-Dimethylphenol	ND		11.0	7.072		ug/L		64	32 - 119
Dimethyl phthalate	ND		11.0	9.046		ug/L		82	10 - 112
4,6-Dinitro-2-methylphenol	ND		22.0	17.57		ug/L		80	10 - 150
2,4-Dinitrophenol	ND		22.0	19.14		ug/L		87	50 - 150
2,4-Dinitrotoluene	ND		11.0	9.329		ug/L		85	39 - 139
2,6-Dinitrotoluene	ND		11.0	9.522		ug/L		87	50 - 150
Di-n-octyl phthalate	ND		11.0	6.678		ug/L		61	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		11.1	6.277	LN	ug/L		57	60 - 120
Fluoranthene	ND		11.0	7.696		ug/L		70	26 - 137
Fluorene	ND		11.0	8.861		ug/L		81	59 - 121
Hexachlorobenzene	ND		11.0	7.231		ug/L		66	10 - 150
Hexachlorobutadiene	ND		11.0	5.252		ug/L		48	24 - 116
Hexachloroethane	ND		11.0	5.477		ug/L		50	40 - 113
Hexachlorocyclopentadiene	ND		11.0	4.661	J,DX	ug/L		42	25 - 120
Indeno[1,2,3-cd]pyrene	ND		11.0	5.893		ug/L		54	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174234-1 MS

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Outfall001_20170121_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Isophorone	ND		11.0	8.899		ug/L		81		21 - 150
Naphthalene	ND		11.0	7.345		ug/L		67		21 - 133
Nitrobenzene	ND		11.0	8.675		ug/L		79		35 - 150
2-Nitrophenol	ND		11.0	8.273		ug/L		75		29 - 150
4-Nitrophenol	ND		22.0	18.45		ug/L		84		10 - 132
N-Nitrosodimethylamine	ND		11.0	7.987		ug/L		73		12 - 123
N-Nitrosodiphenylamine	ND		11.0	1.698	LN	ug/L		15		60 - 120
N-Nitrosodi-n-propylamine	ND		11.0	8.611		ug/L		78		10 - 150
Pentachlorophenol	ND		22.0	18.42		ug/L		84		14 - 150
Phenanthrene	ND		11.0	8.277		ug/L		75		54 - 120
Phenol	ND		11.0	7.795		ug/L		71		10 - 112
Pyrene	ND		11.0	7.378		ug/L		67		52 - 115
1,2,4-Trichlorobenzene	ND		11.0	6.516		ug/L		59		44 - 142
2,4,6-Trichlorophenol	ND		11.0	8.512		ug/L		77		37 - 144
Benzo[g,h,i]perylene	ND		11.0	5.495		ug/L		50		10 - 150
bis (2-chloroisopropyl) ether	ND		11.0	7.808		ug/L		71		45 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	73		50 - 120
2-Fluorophenol	67		30 - 120
2,4,6-Tribromophenol	81		40 - 120
Nitrobenzene-d5	75		45 - 120
Terphenyl-d14	53		37 - 144
Phenol-d6	72		35 - 120

Lab Sample ID: 440-174234-1 MS

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Outfall001_20170121_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Benzidine	ND		11.0	ND	LN	ug/L		0		30 - 160

Lab Sample ID: 440-174234-1 MSD

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Outfall001_20170121_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier								
Acenaphthene	ND		10.9	8.762		ug/L		80		47 - 145	7		25
Acenaphthylene	ND		10.9	8.714		ug/L		80		33 - 145	6		25
Anthracene	ND		10.9	7.580		ug/L		69		27 - 133	6		25
Benzo[a]anthracene	ND		10.9	7.214		ug/L		66		33 - 143	8		20
Benzo[b]fluoranthene	ND		10.9	7.604		ug/L		70		24 - 150	12		25
Benzo[k]fluoranthene	ND		10.9	7.541		ug/L		69		11 - 150	14		30
Benzo[a]pyrene	ND		10.9	7.098		ug/L		65		17 - 150	12		25
Bis(2-chloroethoxy)methane	ND		10.9	9.042		ug/L		83		33 - 150	12		25
Bis(2-chloroethyl)ether	ND		10.9	8.683		ug/L		79		12 - 150	8		25
Bis(2-ethylhexyl) phthalate	ND		10.9	7.469		ug/L		68		10 - 150	12		25
4-Bromophenyl phenyl ether	ND		10.9	9.064		ug/L		83		53 - 127	11		25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174234-1 MSD

Client Sample ID: Outfall001_20170121_Comp

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 384955

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Butyl benzyl phthalate	ND		10.9	9.849		ug/L		90	10 - 150	6	25
4-Chloro-3-methylphenol	ND		10.9	9.510		ug/L		87	22 - 147	8	25
2-Chloronaphthalene	ND		10.9	8.544		ug/L		78	60 - 118	6	20
2-Chlorophenol	ND		10.9	8.234		ug/L		75	23 - 134	5	25
4-Chlorophenyl phenyl ether	ND		10.9	8.750		ug/L		80	25 - 150	6	25
Chrysene	ND		10.9	7.214		ug/L		66	17 - 150	10	25
Dibenz(a,h)anthracene	ND		10.9	6.466		ug/L		59	10 - 150	3	30
Di-n-butyl phthalate	ND		10.9	9.710		ug/L		89	10 - 118	10	25
1,2-Dichlorobenzene	ND		10.9	6.978		ug/L		64	32 - 129	6	25
1,3-Dichlorobenzene	ND		10.9	6.618		ug/L		61	10 - 150	8	25
1,4-Dichlorobenzene	ND		10.9	6.507		ug/L		60	20 - 124	5	25
3,3'-Dichlorobenzidine	ND		10.9	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		10.9	9.119		ug/L		83	39 - 135	10	25
Diethyl phthalate	ND		10.9	10.04		ug/L		92	10 - 114	8	30
2,4-Dimethylphenol	ND		10.9	7.486		ug/L		68	32 - 119	6	25
Dimethyl phthalate	ND		10.9	9.578		ug/L		88	10 - 112	6	30
4,6-Dinitro-2-methylphenol	ND		21.9	19.92		ug/L		91	10 - 150	13	25
2,4-Dinitrophenol	ND		21.9	22.06		ug/L		101	50 - 150	14	25
2,4-Dinitrotoluene	ND		10.9	9.723		ug/L		89	39 - 139	4	25
2,6-Dinitrotoluene	ND		10.9	9.764		ug/L		89	50 - 150	3	20
Di-n-octyl phthalate	ND		10.9	7.248		ug/L		66	10 - 146	8	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		11.0	8.812	BA	ug/L		80	60 - 120	34	25
Fluoranthene	ND		10.9	8.429		ug/L		77	26 - 137	9	25
Fluorene	ND		10.9	9.245		ug/L		85	59 - 121	4	25
Hexachlorobenzene	ND		10.9	7.649		ug/L		70	10 - 150	6	25
Hexachlorobutadiene	ND		10.9	5.940		ug/L		54	24 - 116	12	25
Hexachloroethane	ND		10.9	6.043		ug/L		55	40 - 113	10	25
Hexachlorocyclopentadiene	ND		10.9	5.503		ug/L		50	25 - 120	17	30
Indeno[1,2,3-cd]pyrene	ND		10.9	5.979		ug/L		55	10 - 150	1	30
Isophorone	ND		10.9	9.500		ug/L		87	21 - 150	7	25
Naphthalene	ND		10.9	7.929		ug/L		73	21 - 133	8	25
Nitrobenzene	ND		10.9	9.065		ug/L		83	35 - 150	4	25
2-Nitrophenol	ND		10.9	9.178		ug/L		84	29 - 150	10	25
4-Nitrophenol	ND		21.9	20.46		ug/L		94	10 - 132	10	30
N-Nitrosodimethylamine	ND		10.9	8.460		ug/L		77	12 - 123	6	35
N-Nitrosodiphenylamine	ND		10.9	4.260	LN BA	ug/L		39	60 - 120	86	25
N-Nitrosodi-n-propylamine	ND		10.9	9.109		ug/L		83	10 - 150	6	25
Pentachlorophenol	ND		21.9	20.42		ug/L		93	14 - 150	10	25
Phenanthrene	ND		10.9	8.820		ug/L		81	54 - 120	6	25
Phenol	ND		10.9	8.559		ug/L		78	10 - 112	9	25
Pyrene	ND		10.9	8.027		ug/L		73	52 - 115	8	25
1,2,4-Trichlorobenzene	ND		10.9	7.178		ug/L		66	44 - 142	10	20
2,4,6-Trichlorophenol	ND		10.9	9.657		ug/L		88	37 - 144	13	30
Benzo[g,h,i]perylene	ND		10.9	5.774		ug/L		53	10 - 150	5	30
bis (2-chloroisopropyl) ether	ND		10.9	8.321		ug/L		76	45 - 120	6	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 384349

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	78		50 - 120
2-Fluorophenol	72		30 - 120
2,4,6-Tribromophenol	89		40 - 120
Nitrobenzene-d5	80		45 - 120
Terphenyl-d14	60		37 - 144
Phenol-d6	81		35 - 120

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzidine	ND		10.9	ND	LN	ug/L		0	30 - 160	NC	35

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-383738/1-A
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383738

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	50		29 - 115	01/23/17 07:27	01/24/17 20:30	1

Lab Sample ID: LCS 440-383738/5-A
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	2.67		ug/L		67	50 - 115
Aroclor 1260	4.00	2.52		ug/L		63	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	64		29 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: 440-174234-1 MS

Matrix: Water
Analysis Batch: 384014

Client Sample ID: Outfall001_20170121_Comp

Prep Type: Total/NA
Prep Batch: 383738

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aroclor 1016	ND		4.02	2.76		ug/L		69	45 - 120
Aroclor 1260	ND		4.02	2.71		ug/L		67	55 - 125
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
DCB Decachlorobiphenyl (Surr)	33		29 - 115						

Lab Sample ID: 440-174234-1 MSD

Matrix: Water
Analysis Batch: 384014

Client Sample ID: Outfall001_20170121_Comp

Prep Type: Total/NA
Prep Batch: 383738

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	RPD
	Result	Qualifier		Result	Qualifier						
Aroclor 1016	ND		4.15	3.00		ug/L		72	45 - 120	8	30
Aroclor 1260	ND		4.15	2.84		ug/L		69	55 - 125	5	25
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
DCB Decachlorobiphenyl (Surr)	35		29 - 115								

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-383738/1-A

Matrix: Water
Analysis Batch: 383608

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 383738

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aldrin	ND		0.0050	0.0015	ug/L		01/23/17 07:27	01/23/17 18:13	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/23/17 07:27	01/23/17 18:13	1
beta-BHC	ND		0.010	0.0040	ug/L		01/23/17 07:27	01/23/17 18:13	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/23/17 07:27	01/23/17 18:13	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/23/17 07:27	01/23/17 18:13	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endrin	ND		0.0050	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Heptachlor	ND		0.010	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/23/17 07:27	01/23/17 18:13	1
Toxaphene	ND		0.50	0.25	ug/L		01/23/17 07:27	01/23/17 18:13	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/23/17 07:27	01/23/17 18:13	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/23/17 07:27	01/23/17 18:13	1
MB MB									
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
Tetrachloro-m-xylene	76		10 - 150			01/23/17 07:27	01/23/17 18:13	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-383738/2-A
Matrix: Water
Analysis Batch: 383608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.200	0.125		ug/L		63	42 - 122
alpha-BHC	0.200	0.141		ug/L		70	37 - 134
beta-BHC	0.200	0.130		ug/L		65	17 - 147
delta-BHC	0.200	0.140		ug/L		70	19 - 140
Dieldrin	0.200	0.148		ug/L		74	36 - 146
Endosulfan I	0.200	0.141		ug/L		71	45 - 150
Endosulfan II	0.200	0.149		ug/L		75	10 - 150
Endosulfan sulfate	0.200	0.151		ug/L		76	26 - 144
Endrin	0.200	0.139		ug/L		70	30 - 147
Endrin aldehyde	0.200	0.141		ug/L		71	47 - 115
gamma-BHC (Lindane)	0.200	0.144		ug/L		72	32 - 127
Heptachlor	0.200	0.137		ug/L		68	34 - 115
Heptachlor epoxide	0.200	0.147		ug/L		74	37 - 142
4,4'-DDD	0.200	0.147		ug/L		73	31 - 141
4,4'-DDE	0.200	0.143		ug/L		72	30 - 145
4,4'-DDT	0.200	0.139		ug/L		69	25 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	70		10 - 150

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 383608

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aldrin	ND		0.202	0.149		ug/L		74	35 - 120
alpha-BHC	ND		0.202	0.141		ug/L		70	40 - 120
beta-BHC	ND		0.202	0.140		ug/L		69	50 - 120
delta-BHC	ND		0.202	0.166		ug/L		82	50 - 120
Dieldrin	ND		0.202	0.150		ug/L		74	50 - 120
Endosulfan I	ND		0.202	0.142		ug/L		70	50 - 120
Endosulfan II	ND		0.202	0.140		ug/L		69	50 - 125
Endosulfan sulfate	ND		0.202	0.137		ug/L		68	55 - 125
Endrin	ND		0.202	0.138		ug/L		68	50 - 120
Endrin aldehyde	ND		0.202	0.129		ug/L		64	45 - 125
gamma-BHC (Lindane)	ND		0.202	0.158		ug/L		78	40 - 120
Heptachlor	ND		0.202	0.156		ug/L		77	40 - 120
Heptachlor epoxide	ND		0.202	0.156		ug/L		77	50 - 120
4,4'-DDD	ND		0.202	0.143		ug/L		71	50 - 125
4,4'-DDE	ND		0.202	0.145		ug/L		72	45 - 125
4,4'-DDT	ND		0.202	0.129		ug/L		64	50 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	69		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-174234-1 MSD

Matrix: Water

Analysis Batch: 383608

Client Sample ID: Outfall001_20170121_Comp

Prep Type: Total/NA

Prep Batch: 383738

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	Limits	Limit	
Aldrin	ND		0.205	0.130		ug/L		63	35 - 120	14		30
alpha-BHC	ND		0.205	0.131		ug/L		64	40 - 120	7		30
beta-BHC	ND		0.205	0.121		ug/L		59	50 - 120	15		30
delta-BHC	ND		0.205	0.137		ug/L		67	50 - 120	19		30
Dieldrin	ND		0.205	0.144		ug/L		70	50 - 120	4		30
Endosulfan I	ND		0.205	0.126		ug/L		62	50 - 120	12		30
Endosulfan II	ND		0.205	0.136		ug/L		66	50 - 125	3		30
Endosulfan sulfate	ND		0.205	0.134		ug/L		65	55 - 125	2		30
Endrin	ND		0.205	0.135		ug/L		66	50 - 120	3		30
Endrin aldehyde	ND		0.205	0.128		ug/L		62	45 - 125	1		30
gamma-BHC (Lindane)	ND		0.205	0.134		ug/L		65	40 - 120	16		30
Heptachlor	ND		0.205	0.131		ug/L		64	40 - 120	17		30
Heptachlor epoxide	ND		0.205	0.138		ug/L		67	50 - 120	13		30
4,4'-DDD	ND		0.205	0.139		ug/L		68	50 - 125	3		30
4,4'-DDE	ND		0.205	0.131		ug/L		64	45 - 125	10		30
4,4'-DDT	ND		0.205	0.127		ug/L		62	50 - 125	2		30
Surrogate		MSD	MSD									
		%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene		65		10 - 150								

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-383776/3

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Chromium, hexavalent	ND	IB	1.0	0.25	ug/L			01/23/17 09:50		1

Lab Sample ID: LCS 440-383776/2

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Chromium, hexavalent	50.0	52.4		ug/L		105	90 - 110

Lab Sample ID: MRL 440-383776/4

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec.
							Limits
Chromium, hexavalent	1.00	1.26		ug/L		126	50 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND	BU BV IB	50.0	53.6	IB	ug/L		107	90 - 110

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND	BU BV IB	50.0	53.9	IB	ug/L		108	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383773/4
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			01/23/17 10:09	1
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383773/2
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.16		mg/L		103	90 - 110
Nitrite as N	1.52	1.52		mg/L		100	90 - 110

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.4	BU	1.13	2.43	BU	mg/L		91	80 - 120
Nitrite as N	ND	BU	1.52	1.33	BU	mg/L		88	80 - 120

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.4	BU	1.13	2.63	BU	mg/L		109	80 - 120	8	20
Nitrite as N	ND	BU	1.52	1.60	BU	mg/L		105	80 - 120	18	20

Lab Sample ID: MB 440-383774/4
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 10:09	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 440-383774/4
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.25	mg/L			01/23/17 10:09	1
Sulfate	ND		0.50	0.25	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383774/2
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.82		mg/L		96	90 - 110
Fluoride	5.00	4.61		mg/L		92	90 - 110
Sulfate	5.00	5.07		mg/L		101	90 - 110

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.8		5.00	8.08		mg/L		86	80 - 120
Fluoride	ND		5.00	3.96	LN	mg/L		79	80 - 120
Sulfate	3.3		5.00	7.55		mg/L		85	80 - 120

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chloride	3.8		5.00	8.95		mg/L		104	80 - 120	10	20
Fluoride	ND		5.00	4.84		mg/L		97	80 - 120	20	20
Sulfate	3.3		5.00	8.52		mg/L		104	80 - 120	12	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-383992/3
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 09:02	1

Lab Sample ID: LCS 440-383992/2
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-383992/5
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.22		ug/L		105	75 - 125

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	30.7	LM	ug/L		123	80 - 120

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	31.0	LM	ug/L		124	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.00000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDD	0.00000700	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A

Matrix: Water

Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-384921/1-A

Matrix: Water

Analysis Batch: 385338

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 384921

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		01/27/17 14:54	01/30/17 17:18	1
Boron	ND		0.050	0.025	mg/L		01/27/17 14:54	01/30/17 17:18	1
Barium	ND		0.010	0.0050	mg/L		01/27/17 14:54	01/30/17 17:18	1
Beryllium	ND		2.0	1.0	ug/L		01/27/17 14:54	01/30/17 17:18	1
Cobalt	ND		10	2.5	ug/L		01/27/17 14:54	01/30/17 17:18	1
Chromium	ND		5.0	2.5	ug/L		01/27/17 14:54	01/30/17 17:18	1
Iron	ND		0.10	0.050	mg/L		01/27/17 14:54	01/30/17 17:18	1
Manganese	ND		20	10	ug/L		01/27/17 14:54	01/30/17 17:18	1
Nickel	ND		10	5.0	ug/L		01/27/17 14:54	01/30/17 17:18	1
Vanadium	ND		10	5.0	ug/L		01/27/17 14:54	01/30/17 17:18	1
Zinc	ND		20	10	ug/L		01/27/17 14:54	01/30/17 17:18	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-384921/2-A
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	465		ug/L		93	85 - 115
Boron	0.500	0.448		mg/L		90	85 - 115
Barium	0.500	0.470		mg/L		94	85 - 115
Beryllium	500	463		ug/L		93	85 - 115
Calcium	2.50	2.27		mg/L		91	85 - 115
Cobalt	500	476		ug/L		95	85 - 115
Chromium	500	483		ug/L		97	85 - 115
Iron	0.500	0.473		mg/L		95	85 - 115
Magnesium	2.50	2.34		mg/L		93	85 - 115
Manganese	500	491		ug/L		98	85 - 115
Nickel	500	486		ug/L		97	85 - 115
Vanadium	500	467		ug/L		93	85 - 115
Zinc	500	461		ug/L		92	85 - 115
Silver	250	223		ug/L		89	85 - 115

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		500	475		ug/L		95	70 - 130
Boron	0.049	J,DX	0.500	0.524		mg/L		95	70 - 130
Barium	0.11		0.500	0.627		mg/L		102	70 - 130
Beryllium	ND		500	499		ug/L		100	70 - 130
Calcium	9.5		2.50	12.1		mg/L		104	70 - 130
Cobalt	4.8	J,DX	500	499		ug/L		99	70 - 130
Chromium	18		500	539		ug/L		104	70 - 130
Iron	18		0.500	21.7	BB	mg/L		806	70 - 130
Magnesium	6.5		2.50	9.88	LM	mg/L		136	70 - 130
Manganese	300		500	810		ug/L		103	70 - 130
Nickel	13		500	508		ug/L		99	70 - 130
Vanadium	33		500	542		ug/L		102	70 - 130
Zinc	59		500	551		ug/L		98	70 - 130
Silver	ND		250	235		ug/L		94	70 - 130

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	ND		500	459		ug/L		92	70 - 130	3	20
Boron	0.049	J,DX	0.500	0.490		mg/L		88	70 - 130	7	20
Barium	0.11		0.500	0.589		mg/L		95	70 - 130	6	20
Beryllium	ND		500	466		ug/L		93	70 - 130	7	20
Calcium	9.5		2.50	11.4		mg/L		76	70 - 130	6	20
Cobalt	4.8	J,DX	500	478		ug/L		95	70 - 130	4	20
Chromium	18		500	505		ug/L		97	70 - 130	6	20
Iron	18		0.500	20.2	BB	mg/L		510	70 - 130	7	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Magnesium	6.5		2.50	9.11		mg/L		105	70 - 130	8	20
Manganese	300		500	758		ug/L		92	70 - 130	7	20
Nickel	13		500	497		ug/L		97	70 - 130	2	20
Vanadium	33		500	507		ug/L		95	70 - 130	7	20
Zinc	59		500	514		ug/L		91	70 - 130	7	20
Silver	ND		250	221		ug/L		88	70 - 130	6	20

Lab Sample ID: MB 440-385801/1-C
Matrix: Water
Analysis Batch: 386369

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 386036

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		02/02/17 10:06	02/03/17 11:25	1
Boron	ND		0.050	0.025	mg/L		02/02/17 10:06	02/03/17 11:25	1
Barium	ND		0.010	0.0050	mg/L		02/02/17 10:06	02/03/17 11:25	1
Beryllium	ND		2.0	1.0	ug/L		02/02/17 10:06	02/03/17 11:25	1
Cobalt	ND		10	2.5	ug/L		02/02/17 10:06	02/03/17 11:25	1
Chromium	ND		5.0	2.5	ug/L		02/02/17 10:06	02/03/17 11:25	1
Iron	ND		0.10	0.050	mg/L		02/02/17 10:06	02/03/17 11:25	1
Manganese	ND		20	10	ug/L		02/02/17 10:06	02/03/17 11:25	1
Nickel	ND		10	5.0	ug/L		02/02/17 10:06	02/03/17 11:25	1
Vanadium	ND		10	5.0	ug/L		02/02/17 10:06	02/03/17 11:25	1
Zinc	ND		20	10	ug/L		02/02/17 10:06	02/03/17 11:25	1

Lab Sample ID: LCS 440-385801/2-C
Matrix: Water
Analysis Batch: 386369

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 386036

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Arsenic	500	489		ug/L		98	85 - 115
Boron	0.500	0.463		mg/L		93	85 - 115
Barium	0.500	0.496		mg/L		99	85 - 115
Beryllium	500	489		ug/L		98	85 - 115
Calcium	2.50	2.48		mg/L		99	85 - 115
Cobalt	500	504		ug/L		101	85 - 115
Chromium	500	512		ug/L		102	85 - 115
Iron	0.500	0.494		mg/L		99	85 - 115
Magnesium	2.50	2.48		mg/L		99	85 - 115
Manganese	500	512		ug/L		102	85 - 115
Nickel	500	518		ug/L		104	85 - 115
Vanadium	500	489		ug/L		98	85 - 115
Zinc	500	486		ug/L		97	85 - 115
Silver	250	228		ug/L		91	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174234-2 MS

Matrix: Water

Analysis Batch: 386369

Client Sample ID: Outfall001_20170121_Comp_F

Prep Type: Dissolved

Prep Batch: 386036

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Arsenic	ND	QP	500	507		ug/L		101	70 - 130	
Boron	0.031	J,DX QP	0.500	0.518		mg/L		97	70 - 130	
Barium	0.019	QP	0.500	0.524		mg/L		101	70 - 130	
Beryllium	ND	QP	500	503		ug/L		101	70 - 130	
Calcium	6.9	QP	2.50	9.39		mg/L		100	70 - 130	
Cobalt	ND	QP	500	516		ug/L		103	70 - 130	
Chromium	ND	QP	500	528		ug/L		106	70 - 130	
Iron	1.1	QP	0.500	1.72	LM	mg/L		131	70 - 130	
Magnesium	2.5	QP	2.50	5.00		mg/L		102	70 - 130	
Manganese	13	J,DX QP	500	535		ug/L		104	70 - 130	
Nickel	ND	QP	500	535		ug/L		107	70 - 130	
Vanadium	ND	QP	500	505		ug/L		101	70 - 130	
Zinc	ND	QP	500	505		ug/L		101	70 - 130	
Silver	ND	QP	250	234		ug/L		93	70 - 130	

Lab Sample ID: 440-174234-2 MSD

Matrix: Water

Analysis Batch: 386369

Client Sample ID: Outfall001_20170121_Comp_F

Prep Type: Dissolved

Prep Batch: 386036

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Arsenic	ND	QP	500	519		ug/L		104	70 - 130	2	20
Boron	0.031	J,DX QP	0.500	0.534		mg/L		101	70 - 130	3	20
Barium	0.019	QP	0.500	0.541		mg/L		105	70 - 130	3	20
Beryllium	ND	QP	500	528		ug/L		106	70 - 130	5	20
Calcium	6.9	QP	2.50	9.75		mg/L		114	70 - 130	4	20
Cobalt	ND	QP	500	530		ug/L		106	70 - 130	3	20
Chromium	ND	QP	500	543		ug/L		109	70 - 130	3	20
Iron	1.1	QP	0.500	1.78	LM	mg/L		144	70 - 130	4	20
Magnesium	2.5	QP	2.50	5.24		mg/L		111	70 - 130	5	20
Manganese	13	J,DX QP	500	550		ug/L		107	70 - 130	3	20
Nickel	ND	QP	500	520		ug/L		104	70 - 130	3	20
Vanadium	ND	QP	500	519		ug/L		104	70 - 130	3	20
Zinc	ND	QP	500	517		ug/L		103	70 - 130	2	20
Silver	ND	QP	250	239		ug/L		96	70 - 130	2	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-384922/1-A

Matrix: Water

Analysis Batch: 385495

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 384922

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Cadmium	ND		1.0	0.25	ug/L		01/27/17 14:56	01/31/17 11:49		1
Copper	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49		1
Lead	ND		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49		1
Antimony	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49		1
Selenium	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49		1
Thallium	ND		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49		1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-384922/1-A
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49	1

Lab Sample ID: LCS 440-384922/2-A
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	72.3		ug/L		90	85 - 115
Copper	80.0	73.7		ug/L		92	85 - 115
Lead	80.0	72.6		ug/L		91	85 - 115
Antimony	80.0	81.3		ug/L		102	85 - 115
Selenium	80.0	73.9		ug/L		92	85 - 115
Thallium	80.0	75.1		ug/L		94	85 - 115
Silver	80.0	72.4		ug/L		90	85 - 115

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	70.7		ug/L		88	70 - 130
Copper	11		80.0	83.1		ug/L		90	70 - 130
Lead	8.6		80.0	80.4		ug/L		90	70 - 130
Antimony	ND		80.0	51.5	LN	ug/L		64	70 - 130
Selenium	ND		80.0	63.5		ug/L		79	70 - 130
Thallium	ND		80.0	73.8		ug/L		92	70 - 130
Silver	ND		80.0	71.7		ug/L		90	70 - 130

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	72.7		ug/L		91	70 - 130	3	20
Copper	11		80.0	85.5		ug/L		93	70 - 130	3	20
Lead	8.6		80.0	82.0		ug/L		92	70 - 130	2	20
Antimony	ND		80.0	51.9	LN	ug/L		65	70 - 130	1	20
Selenium	ND		80.0	61.9		ug/L		77	70 - 130	3	20
Thallium	ND		80.0	75.6		ug/L		94	70 - 130	2	20
Silver	ND		80.0	73.2		ug/L		91	70 - 130	2	20

Lab Sample ID: MB 440-385801/1-D
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 386038

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/02/17 10:08	02/03/17 16:03	1
Copper	ND		2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1
Lead	ND		1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-385801/1-D
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 386038

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1
Selenium	ND		2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1
Thallium	ND		1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1
Silver	ND		1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1

Lab Sample ID: LCS 440-385801/2-D
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 386038

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	73.4		ug/L		92	85 - 115
Copper	80.0	72.7		ug/L		91	85 - 115
Lead	80.0	74.3		ug/L		93	85 - 115
Antimony	80.0	83.3		ug/L		104	85 - 115
Selenium	80.0	73.7		ug/L		92	85 - 115
Thallium	80.0	76.8		ug/L		96	85 - 115
Silver	80.0	72.7		ug/L		91	85 - 115

Lab Sample ID: 440-174235-C-3-F MS
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 386038

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	73.9		ug/L		92	70 - 130
Copper	2.3	QP	80.0	75.8		ug/L		92	70 - 130
Lead	ND	QP	80.0	75.1		ug/L		94	70 - 130
Antimony	ND	QP	80.0	83.7		ug/L		105	70 - 130
Selenium	ND	QP	80.0	76.9		ug/L		96	70 - 130
Thallium	ND	QP	80.0	77.2		ug/L		96	70 - 130
Silver	ND	QP	80.0	72.2		ug/L		90	70 - 130

Lab Sample ID: 440-174235-C-3-G MSD
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 386038

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	76.6		ug/L		96	70 - 130	4	20
Copper	2.3	QP	80.0	77.8		ug/L		94	70 - 130	3	20
Lead	ND	QP	80.0	75.7		ug/L		95	70 - 130	1	20
Antimony	ND	QP	80.0	86.7		ug/L		108	70 - 130	4	20
Selenium	ND	QP	80.0	77.8		ug/L		97	70 - 130	1	20
Thallium	ND	QP	80.0	79.0		ug/L		99	70 - 130	2	20
Silver	ND	QP	80.0	75.5		ug/L		94	70 - 130	4	20

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384111/1-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384111

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:13	1

Lab Sample ID: LCS 440-384111/2-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.11		ug/L		101	85 - 115

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.32		ug/L		91	70 - 130

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.08		ug/L		88	70 - 130	3	20

Lab Sample ID: MB 440-385801/1-B
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/01/17 23:48	02/02/17 20:49	1

Lab Sample ID: LCS 440-385801/2-B
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.36		ug/L		92	85 - 115

Lab Sample ID: 440-174235-C-3-C MS
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385922

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.40		ug/L		92	70 - 130

Lab Sample ID: 440-174235-C-3-D MSD
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385922

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.04		ug/L		88	70 - 130	5	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-383844/5
Matrix: Water
Analysis Batch: 383844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			01/23/17 15:55	1

Lab Sample ID: 440-174234-1 DU
Matrix: Water
Analysis Batch: 383844

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	350	BU	354		NTU		0.2	20

Method: DV-WC-0077 - Hydrazine, Ion Chromatography

Lab Sample ID: MB 280-360047/1-A
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monomethyl Hydrazine	ND		10	0.25	ug/L		01/25/17 20:22	02/03/17 21:06	1

Lab Sample ID: LCS 280-360047/2-A
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	49.6	47.7		ug/L		96	82 - 122

Lab Sample ID: 280-93321-O-16-B MS
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	ND		49.6	42.3		ug/L		85	81 - 121

Lab Sample ID: 280-93321-O-16-C MSD
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Monomethyl Hydrazine	ND		49.6	43.1		ug/L		87	81 - 121	2	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384518/1
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:21	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-384518/2
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1020		mg/L		102	90 - 110

Lab Sample ID: 440-174110-D-1 DU
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	72		71.0		mg/L		1	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-384715/1
Matrix: Water
Analysis Batch: 384715

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/26/17 18:10	1

Lab Sample ID: LCS 440-384715/2
Matrix: Water
Analysis Batch: 384715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1070		mg/L		107	85 - 115

Lab Sample ID: 440-174740-B-1 DU
Matrix: Water
Analysis Batch: 384715

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	40		39.0		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-383875/1-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383875

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:16	1

Lab Sample ID: LCS 440-383875/2-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.4		ug/L		96	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCSD 440-383875/3-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	93.3		ug/L		93	90 - 110	3	10

Lab Sample ID: 440-174110-D-1-B MS
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	98.3		ug/L		98	70 - 115

Lab Sample ID: 440-174110-D-1-C MSD
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	100		ug/L		100	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-384964/10
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 13:34	1

Lab Sample ID: LCS 440-384964/11
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.160		mg/L		103	90 - 110

Lab Sample ID: MRL 440-384964/9
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.3150		mg/L		158	10 - 200

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	4.960		mg/L		99	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.040		mg/L		101	90 - 110	2	15

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-384224/8
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.65	mg/L			01/24/17 11:12	1

Lab Sample ID: LCS 440-384224/7
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.78		mg/L		98	90 - 110

Lab Sample ID: 440-174261-N-1 MS
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	18		5.00	22.6		mg/L		99	80 - 120

Lab Sample ID: 440-174261-N-1 MSD
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	18		5.00	22.6		mg/L		99	80 - 120	0	20

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-383876/3
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			01/23/17 14:53	1

Lab Sample ID: LCS 440-383876/4
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.274		mg/L		109	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 440-174234-1 MS
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	ND	BU	0.250	0.239	BU	mg/L		96	50 - 125

Lab Sample ID: 440-174234-1 MSD
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	ND	BU	0.250	0.216	BU	mg/L		87	50 - 125	10	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-383675/1
Matrix: Water
Analysis Batch: 383675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			01/22/17 10:00	1

Lab Sample ID: LCS 440-383675/4
Matrix: Water
Analysis Batch: 383675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	217		mg/L		109	85 - 115

Lab Sample ID: LCSD 440-383675/5
Matrix: Water
Analysis Batch: 383675

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	213		mg/L		107	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

GC/MS VOA

Analysis Batch: 385626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	8260B SIM	
MB 440-385626/2	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-385626/3	Lab Control Sample	Total/NA	Water	8260B SIM	
440-174317-Y-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
440-174317-Y-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

GC/MS Semi VOA

Prep Batch: 384349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	625	
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	625	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	625	

Analysis Batch: 384955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	625	384349
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	625	384349

Analysis Batch: 385461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	625	384349
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	625	384349

GC Semi VOA

Analysis Batch: 383608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	608 Pesticides	383738
MB 440-383738/1-A	Method Blank	Total/NA	Water	608 Pesticides	383738
LCS 440-383738/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	383738
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	608 Pesticides	383738
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	608 Pesticides	383738

Prep Batch: 383738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	608	
MB 440-383738/1-A	Method Blank	Total/NA	Water	608	
LCS 440-383738/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-383738/5-A	Lab Control Sample	Total/NA	Water	608	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	608	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	608	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

GC Semi VOA (Continued)

Prep Batch: 383738 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	608	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	608	

Analysis Batch: 384014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	608 PCB LL	383738
MB 440-383738/1-A	Method Blank	Total/NA	Water	608 PCB LL	383738
LCS 440-383738/5-A	Lab Control Sample	Total/NA	Water	608 PCB LL	383738
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	608 PCB LL	383738
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	608 PCB LL	383738

HPLC/IC

Analysis Batch: 383773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	300.0	
MB 440-383773/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383773/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	300.0	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	300.0	

Analysis Batch: 383774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	300.0	
MB 440-383774/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383774/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	300.0	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	300.0	

Analysis Batch: 383776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	218.6	
MB 440-383776/3	Method Blank	Total/NA	Water	218.6	
LCS 440-383776/2	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-383776/4	Lab Control Sample	Total/NA	Water	218.6	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	218.6	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	218.6	

Analysis Batch: 383992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	314.0	
MB 440-383992/3	Method Blank	Total/NA	Water	314.0	
LCS 440-383992/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-383992/5	Lab Control Sample	Total/NA	Water	314.0	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	314.0	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	314.0	

Analysis Batch: 385262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	NO3NO2 Calc	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	1613B	
440-174234-1 - RA	Outfall001_20170121_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1 - RA	Outfall001_20170121_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384111

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	245.1	
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	245.1	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	245.1	

Analysis Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	245.1	384111
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	384111
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	384111
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	245.1	384111
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	245.1	384111

Prep Batch: 384921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-384921/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-384921/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174234-1 MS	Outfall001_20170121_Comp	Total Recoverable	Water	200.2	
440-174234-1 MSD	Outfall001_20170121_Comp	Total Recoverable	Water	200.2	

Prep Batch: 384922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-384922/1-A	Method Blank	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Metals (Continued)

Prep Batch: 384922 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-384922/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174234-1 MS	Outfall001_20170121_Comp	Total Recoverable	Water	200.2	
440-174234-1 MSD	Outfall001_20170121_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 385338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384921
MB 440-384921/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	384921
LCS 440-384921/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	384921
440-174234-1 MS	Outfall001_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384921
440-174234-1 MSD	Outfall001_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384921

Analysis Batch: 385495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total Recoverable	Water	200.8	384922
MB 440-384922/1-A	Method Blank	Total Recoverable	Water	200.8	384922
LCS 440-384922/2-A	Lab Control Sample	Total Recoverable	Water	200.8	384922
440-174234-1 MS	Outfall001_20170121_Comp	Total Recoverable	Water	200.8	384922
440-174234-1 MSD	Outfall001_20170121_Comp	Total Recoverable	Water	200.8	384922

Filtration Batch: 385801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	FILTRATION	
MB 440-385801/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-385801/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-385801/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-385801/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-385801/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-385801/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174234-2 MS	Outfall001_20170121_Comp_F	Dissolved	Water	FILTRATION	
440-174234-2 MSD	Outfall001_20170121_Comp_F	Dissolved	Water	FILTRATION	
440-174235-C-3-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174235-C-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174235-C-3-F MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174235-C-3-G MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 385922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	245.1	385801
MB 440-385801/1-B	Method Blank	Dissolved	Water	245.1	385801
LCS 440-385801/2-B	Lab Control Sample	Dissolved	Water	245.1	385801
440-174235-C-3-C MS	Matrix Spike	Dissolved	Water	245.1	385801
440-174235-C-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	385801

Prep Batch: 386036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	200.2	385801
MB 440-385801/1-C	Method Blank	Dissolved	Water	200.2	385801
LCS 440-385801/2-C	Lab Control Sample	Dissolved	Water	200.2	385801
440-174234-2 MS	Outfall001_20170121_Comp_F	Dissolved	Water	200.2	385801
440-174234-2 MSD	Outfall001_20170121_Comp_F	Dissolved	Water	200.2	385801

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Prep Batch: 386038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	200.2	385801
MB 440-385801/1-D	Method Blank	Dissolved	Water	200.2	385801
LCS 440-385801/2-D	Lab Control Sample	Dissolved	Water	200.2	385801
440-174235-C-3-F MS	Matrix Spike	Dissolved	Water	200.2	385801
440-174235-C-3-G MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	385801

Analysis Batch: 386100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total Recoverable	Water	SM 2340B	
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 386369

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	386036
MB 440-385801/1-C	Method Blank	Dissolved	Water	200.7 Rev 4.4	386036
LCS 440-385801/2-C	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	386036
440-174234-2 MS	Outfall001_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	386036
440-174234-2 MSD	Outfall001_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	386036

Analysis Batch: 386382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	200.8	386038
MB 440-385801/1-D	Method Blank	Dissolved	Water	200.8	386038
LCS 440-385801/2-D	Lab Control Sample	Dissolved	Water	200.8	386038
440-174235-C-3-F MS	Matrix Spike	Dissolved	Water	200.8	386038
440-174235-C-3-G MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	386038

Analysis Batch: 386411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-2	Outfall001_20170121_Comp_F	Dissolved	Water	245.1	385922
MB 440-385801/1-B	Method Blank	Dissolved	Water	245.1	385922
LCS 440-385801/2-B	Lab Control Sample	Dissolved	Water	245.1	385922
440-174235-C-3-C MS	Matrix Spike	Dissolved	Water	245.1	385922
440-174235-C-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	385922

General Chemistry

Prep Batch: 360047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	Filtration	
MB 280-360047/1-A	Method Blank	Total/NA	Water	Filtration	
LCS 280-360047/2-A	Lab Control Sample	Total/NA	Water	Filtration	
280-93321-O-16-B MS	Matrix Spike	Total/NA	Water	Filtration	
280-93321-O-16-C MSD	Matrix Spike Duplicate	Total/NA	Water	Filtration	

Analysis Batch: 361024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	DV-WC-0077	360047
MB 280-360047/1-A	Method Blank	Total/NA	Water	DV-WC-0077	360047
LCS 280-360047/2-A	Lab Control Sample	Total/NA	Water	DV-WC-0077	360047
280-93321-O-16-B MS	Matrix Spike	Total/NA	Water	DV-WC-0077	360047
280-93321-O-16-C MSD	Matrix Spike Duplicate	Total/NA	Water	DV-WC-0077	360047

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

General Chemistry (Continued)

Analysis Batch: 383675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM5210B	
USB 440-383675/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-383675/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCS 440-383675/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 383844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	180.1	
MB 440-383844/5	Method Blank	Total/NA	Water	180.1	
440-174234-1 DU	Outfall001_20170121_Comp	Total/NA	Water	180.1	

Prep Batch: 383875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	Distill/CN	
MB 440-383875/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCS 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 383876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM 5540C	
MB 440-383876/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-383876/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	SM 5540C	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	SM 5540C	

Analysis Batch: 384201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM 4500 CN E	383875
MB 440-383875/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	383875

Analysis Batch: 384224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM 5310B	
MB 440-384224/8	Method Blank	Total/NA	Water	SM 5310B	
LCS 440-384224/7	Lab Control Sample	Total/NA	Water	SM 5310B	
440-174261-N-1 MS	Matrix Spike	Total/NA	Water	SM 5310B	
440-174261-N-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310B	

Analysis Batch: 384518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM 2540C	
MB 440-384518/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384518/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174110-D-1 DU	Duplicate	Total/NA	Water	SM 2540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Analysis Batch: 384715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM 2540D	
MB 440-384715/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-384715/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174740-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 384964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-384964/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-384964/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-384964/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-174234-1 MS	Outfall001_20170121_Comp	Total/NA	Water	SM 4500 NH3 G	
440-174234-1 MSD	Outfall001_20170121_Comp	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BA	Relative percent difference out of control

GC Semi VOA

Qualifier	Qualifier Description
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
BU	Analyzed out of holding time
BV	Sample received after holding time expired
IB	CCV recovery above limit; analyte not detected
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BB	Sample > 4X spike concentration
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-17
California	State Program	9	2513	08-31-16 *
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-17
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16 *
Kansas	NELAP	7	E-10166	04-30-17
Louisiana	NELAP	6	02096	06-30-17
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-17 *
Nevada	State Program	9	CO0026	07-31-17
New Hampshire	NELAP	1	205310	04-28-17
New Jersey	NELAP	2	CO004	06-30-17
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-17 *
Oklahoma	State Program	6	8614	08-31-17
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-17
South Carolina	State Program	4	72002001	01-09-17 *
Texas	NELAP	6	T104704183-16-12	09-30-17
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-17
Virginia	NELAP	3	460232	06-14-17
Washington	State Program	10	C583	08-02-17
West Virginia DEP	State Program	3	354	11-30-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Laboratory: TestAmerica Denver (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999615430	08-31-17
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall001_20170120__Comp (440-174234-1)
DATE RECEIVED: 23 Jan - 17
ABC LAB NO.: TAM0117.181

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = FAIL % EFFECT = 33.36 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 01 Feb-17 15:43 (p 1 of 1)
 Test Code: TAM0117.181sel | 01-7089-7321

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 12-9040-0069	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:19	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-8929-3583	Code: TAM0117.181sel	Client: Test America Irvine
Sample Date: 20 Jan-17 14:57	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 71h (1 °C)	Station: Outfall001_20170120_Comp (440-174234-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
00-4101-9729	Cell Density	TST-Welch's t Test	0.9998	100% failed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
00-4101-9729	Cell Density	Control CV	0.02809	<<	0.2	Yes	Passes Criteria
00-4101-9729	Cell Density	Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.398E+6	1.519E+6	1.458E+4	4.123E+4	2.81%	0.00%
100		8	9.782E+5	9.277E+5	1.029E+6	9.130E+5	1.103E+6	2.138E+4	6.047E+4	6.18%	33.36%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		1.010E+6	1.007E+6	9.570E+5	9.490E+5	9.540E+5	9.130E+5	1.103E+6	9.330E+5

CETIS Analytical Report

Report Date: 01 Feb-17 15:43 (p 1 of 2)
 Test Code: TAM0117.181sel | 01-7089-7321

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 00-4101-9729	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 01 Feb-17 15:41	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 12-9040-0069	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:19	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-8929-3583	Code: TAM0117.181sel	Client: Test America Irvine
Sample Date: 20 Jan-17 14:57	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 71h (1 °C)	Station: Outfall001_20170120_Comp (440-174234-	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% failed cell density

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100	-5.112	0.6998	10	CDF	0.9998	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02809	<<	0.2	Yes	Passes Criteria
Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	9.594E+11	9.594E+11	1	358.2	<1.0E-37	Significant Effect
Error	3.75E+10	2.679E+09	14			
Total	9.969E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.7871	8.862	0.3900	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.2074	8.862	0.6558	Equal Variances
Variances	Variance Ratio F Test	2.151	8.885	0.3338	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4675	3.878	0.2546	Normal Distribution
Distribution	D'Agostino Skewness Test	1.501	2.576	0.1334	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1646	0.2471	0.3000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9312	0.8408	0.2549	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.478E+6	1.398E+6	1.519E+6	1.458E+4	2.81%	0.00%
100		8	9.782E+5	9.277E+5	1.029E+6	9.555E+5	9.130E+5	1.103E+6	2.138E+4	6.18%	33.36%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		1.010E+6	1.007E+6	9.570E+5	9.490E+5	9.540E+5	9.130E+5	1.103E+6	9.330E+5

CETIS Measurement Report

Report Date: 01 Feb-17 15:43 (p 1 of 2)
 Test Code: TAM0117.181sel | 01-7089-7321

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 12-9040-0069	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:19	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-8929-3583	Code: TAM0117.181sel	Client: Test America Irvine
Sample Date: 20 Jan-17 14:57	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 71h (1 °C)	Station: Outfall001_20170120_Comp (440-174234-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	48			48	48	0	0	0.0%	0
Overall		2	58.5	-74.92	191.9	48	69	10.5	14.85	25.38%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	438	451.2	439	452	2.379	5.32	1.2%	0
100		5	195.6	193.7	197.5	194	198	0.6782	1.517	0.78%	0
Overall		10	320.1	226.2	414	194	452	41.52	131.3	41.01%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	59			59	59	0	0	0.0%	0
Overall		2	78	-163.4	319.4	59	97	19	26.87	34.45%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.7	7.307	8.093	7.4	8.2	0.1414	0.3162	4.11%	0
Overall		10	7.61	7.433	7.787	7.4	8.2	0.0781	0.247	3.25%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.16	24.02	24.3	24	24.5	0.06182	0.1955	0.81%	0 (0%)

TestAmerica Irvine
 17461 Derian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab) Sampler: Lab PM: Carrier Tracking No(s): COC No:
 Shipping/Receiving Phone: Patel, Urvashi 440-1067111
 Company: Aquatic Bioassay E-Mail: urvashi.patel@testamericainc.com Page: 1 of 1
 Address: 29 North Olive Street, Due Date Requested: 2/3/2017 TAT Requested (days): 440-174234-1
 City: Ventura State, Zip: CA, 93001 PO #: W/O #: Project #: 44009879
 Project Name: Boeing NPDES SSFL outfalls SSOV#: 440-174234-1

Accreditations Required (See note): Analysis Requested
 Perform MS/MSD (Yes or No) SUB (Chronic-Selenium) Chronic-Selenium
 Total Number of containers 4
 Special Instructions/Note:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=soil, O=water/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Preservation Codes:
Outfall001_20170120_Comp (440-174234-1)	1/20/17	14:57 Pacific		Water	X			A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NH4SO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDTA M - Hexane N - None O - AsH2O2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecyl/drate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)

Temp. deg. C = 10
 Chlorine (mg/L) = 0
 NH3 (mg/L) = 1.0

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
<i>[Signature]</i>	1-23-17 11:15	Company	<i>[Signature]</i>	1-23-17 08:00	Company

Custody Seals Intact: Yes No
 Custody Seal No.:
 Cooler Temperature(s) °C and Other Remarks:

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

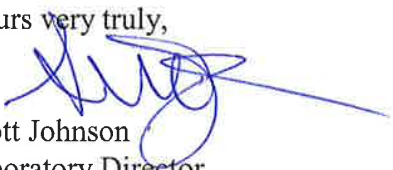
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 14-2916-7122	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 19 Jan-17 16:21	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:	
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab	
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	34.35	13.62	61.11
IC10	69.42	18.65	99.03
IC15	93.35	62.81	109.5
IC20	110.4	88.48	124.6
IC25	127.5	108.9	141.2
IC40	155.7	149.9	160.7
IC50	169.5	164.4	175.1

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.0%
20		4	1.341E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.82%	6.92%
80		4	1.192E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5





1 of 2
2 of 2

Test America

CHAIN OF CUSTODY FORM

440-174234 Chain of Custody

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall 001, 002, 011, 018 Outfall 001 Comp		ANALYSIS REQUIRED										Comments			
Test America Contact: Urvaashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Co, V, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, Hg, Ba, Co, V, Fe													
Sampler: RYAN TENSEN		Field Manager: Mark Dominick 818.350.7312, 818.598.0702 (cell)		Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Co, V, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, Hg, Ba, Co, V, Fe										Comments			
Sample Description		Sample I.D.		Sample Matrix		Sampling Date/Time		Container Type		# of Cont.		Preservative			Bottle #		MS/MSD
Outfall 001		Outfall001_20170120_Comp		WM		1/20/2017 1451		500 mL Poly		3		HNO ₃		80		Yes	
				WM				1 L Glass Amber		2		None		110		No	
				WM				1 L Poly		1		None		115		No	
				WM				500 mL Poly		6		None		120		Yes	
				WM				500 mL Poly		6		None		125		Yes	
				WM		1/20/2017 1451		500 mL Poly		1		None		150		No	
				WM				500 mL Poly		3		H ₂ SO ₄		180		Yes	
				WM				1 L Glass Amber		6		None		250		Yes	
				WM				1 L Glass Amber		6		None		175		Yes	
				WM				1 L Poly		1		None		185		No	
				WM				500 mL Poly		6		HNO₃		615		Yes	
				WM				1 L Glass Amber		2		None		110		No	
				WM				500 mL Poly		2		None		120		No	
				WM				500 mL Poly		2		None		125		No	
				WM				1 L Glass Amber		2		None		250		No	
				WM				1 L Glass Amber		2		None		175		No	

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 001 for this storm event.
These must be added to the same work order for COC Page 1 of 3 for Outfall 001 for the same event.

Legend: R=Routine, A=Annual, C=Quarterly

Relinquished By: DJ	Date/Time: 1/21/17 1330	Company: JHA	Received By: [Signature]	Date/Time: 1/21/17 1330	Company: JHA
Relinquished By: [Signature]	Date/Time: 1/21/17 1545	Company: 1545	Received By: [Signature]	Date/Time: 1/21/17 1545	Company: 1545
Relinquished By: FROM WALKIN BRIDGE	Date/Time: 1/22/17 @ 4:15am	Company: FROM WALKIN BRIDGE	Received By: [Signature]	Date/Time: 1/22/17 @ 4:15	Company: FROM WALKIN BRIDGE

Turn-around time (Check): 24 Hour: 72 Hour: 10 Day: X
 48 Hour: 5 Day: Normal:

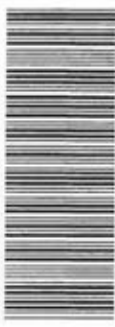
Sample Integrity: (Check) Intact: On Ice:

Data Requirements: (Check) No Level IV: All Level IV: X

1.1/1.4 1.6/1.9 1.1/1.4 1.0/1.3 1.9/1.7 1.1/1.4 1.3/1.5 IR SC 6

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)





Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Urvashi Patel	440-174234 Chain of Custody	COC No: 440-106729.1
Client Contact: Urvashi Patel		Phone: Urvashi.patel@testamericainc.com	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 440-174234-1	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
Address: 13715 Rider Trail North, Earth City, MO, 63045		Due Date Requested: 2/2/2017	Analysis Requested		
City: Earth City		TAT Requested (days):	Total Number of Containers		
State, Zip: MO, 63045		PO #:	904.0/PreSep_0 Radium-228		
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:	903.0/PreSep_21 Radium-226		
Email:		Project #:	906.0/LSC_Dist_Susp Tritium		
Project Name: Boeing NPDES SSFL outfalls		SSOW#:	905.5/90/PreSep_7 Strontium-90		
Site:		Site:	A01R_U/EtChrom_Actin Total Uranium		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Residue, Spill, Operational, Other)
Outfall001_20170120_Comp (440-174234-1)		1/20/17	14:57 Pacific	Water	Water
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of Containers	
X		X		3	
Special Instructions/Note:		Boeing SSFL: DO NOT FILTER; use prep date from preservation			
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2					
Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____					
Relinquished by: <i>Va Bandy</i>		Date/Time: 1/23/17 17:00	Company: TAT	Received by: <i>Eddy</i>	Date/Time: 1/23/17 17:00
Relinquished by: FED EX		Date/Time:	Company:	Received by:	Date/Time: 1/24/17 09:20
Relinquished by:		Date/Time:	Company:	Received by:	Date/Time:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Patel, Urvashi	Carrier Tracking Note:	COC No: 440-106733-1	
Client Contact: Urvashi.patel@testamericainc.com		Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1	
Shipping/Receiving Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 440-174234-1	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Address: 4955 Yarrow Street, Arvada, CO, 80002		Due Date Requested: 2/2/2017		Analysis Requested:		
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		TAT Requested (days):		Total Number of Containers:		
Email:		PO #:		Hydrate (IC/Filtration, P, 48 (MOD) Local Method)		
Project Name: Boeing NPDES SSFL outfalls		WO #:		Perform MS/MSD (Yes or No)		
Site:		Project #: 44009879		Field Filtered Sample (Yes or No)		
		SSON#:		Special Instructions/Note:		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Organic, etc.)	Preservation Code:
Outfall001_20170120_Comp (440-174234-1)	1/20/17	14:57 Pacific	Water	X		
Outfall001_20170120_Comp_Extra (440-174234-3)	1/20/17	14:57 Pacific	Water	X		
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/methods being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>						
Possible Hazard Identification						
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Special Instructions/QC Requirements:						
Empty Kit Relinquished by:		Date:		Method of Shipment:		
Retinquished by: V. B. Smith		1/23/17 12:00		Company: TAD		
Retinquished by:		Date/Time:		Company: TAD		
Retinquished by:		Date/Time:		Company: TAD		
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0.3 PL#5 - C-2 TR01155REV RY 1-24-17		



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Patel, Urvashi	Carrier Tracking No(s):
Client Contact: Shipping/Receiving		E-Mail: urvashi.patel@testamericainc.com	State of Origin: California
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Job #: 440-174234-1	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Preservation Codes: M - Hexane N - None O - As ₂ O ₃ P - Na ₂ O ₂ Q - Na ₂ SO ₃ R - Na ₂ SO ₄ S - H ₂ SO ₄ T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Other:	
Due Date Requested: 2/2/2017		Analysis Requested:	
TAT Requested (days):		Total Number of containers: 2	
PO #:		Special Instructions/Note: See OAS, Boeing_wfu to zero, ug/L, Use Boeing glassware.	
VO #:			
Project #:			
44009879			
SSOW#:			
Sample Identification - Client ID (Lab ID)		Field Filtered Sample (Yes or No)	
Outfall001_20170120_Comp (440-174234-1)		1613B/1613B_Sox_Sep_P Standard List w/ Totals	
Sample Date: 1/20/17	Sample Time: 14:57 Pacific	Perform MS/MSD (Yes or No):	X
Sample Type (C=Comp, G=grab):	Preservation Code: Water	Special Instructions/Note: See OAS, Boeing_wfu to zero, ug/L, Use Boeing glassware.	
Matrix (Residue, Solid, On-surface, BT-Tissue, AAR):			
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>			
Possible Hazard Identification			
Unconfirmed			
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	
Empty Kit Relinquished by:		Time:	
Relinquished by: <i>V. B. Band</i>		Date: 1/23/17 17:00	
Relinquished by:		Company: CAI	
Relinquished by:		Company: Ray G. Turpen	
Custody Seals Intact		Date/Time: 1/24/17 09:45	
Δ Yes Δ No		Date/Time: 1/23/17 17:00	
Custody Seal No.:		Company: TALS	
Cooler Temperature(s) °C and Other Remarks: 1.0 °C		Date/Time: 1/24/17 09:45	
		Company:	



TestAmerica Irvine
 17461 Derian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING



Client Information (Sub Contract Lab)		Lab PM: Patel, Urvashi		Carrier Tracking No(s): 440-106774.1	
Client Contact: Shipping/Receiving		E-Mail: urvashi.patel@testamericainc.com		State of Origin: California	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 440-174234-1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 2/2/2017		Analysis Requested:	
City: West Sacramento		TAT Requested (days):		M - Hexane N - None O - AsMaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Phone: 916-373-5500(Tel) 916-372-1059(Fax)		PO #:		Preservation Codes:	
Email:		WO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		Total Number of containers: 2	
Site:		SSOW#:		Special Instructions/Note: See OAS, Boeing_wiu to zero, ugl; Use Boeing glassware	
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
Outfall001_20170120_Comp_Extra (440-174234-3)		1/20/17		X	
Sample Time		Sample Type (C=comp, G=grab)		Perform MS/MSD (Yes or No)	
14:57 Pacific		Water		X	
Matrix (If water, specify, if not water, specify)		Preservation Code:		1613B/1613B_Box_Sep_P_Standard List w/ Totals	
Water				1613B/1613B_Box_Sep_P_Standard List w/ Totals	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/method being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: V n Bawh Date/Time: 1/24/17 17:00 Company: JAT
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Received by: FedEx Date/Time: 1/24/17 12:06 Company: _____
 Received by: Troy G. Tompan Date/Time: 1/25/17 1:00 Company: Jaws
 Received by: _____ Date/Time: _____ Company: _____

Cooler Temperature(s) °C and Other Remarks: 0.3°C Ice

Custody Seal No.: _____
 Custody Seal's Intact: Yes No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174234-1

Login Number: 174234

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174234-1

Login Number: 174234

List Number: 2

Creator: Pottruff, Reed W

List Source: TestAmerica Denver

List Creation: 01/24/17 12:55 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	False	Not present
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174234-1

Login Number: 174234

List Number: 4

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/25/17 12:22 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174234-1

Login Number: 174234

List Number: 5

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/26/17 09:53 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)	
440-174234-1	Outfall001_20170121_Comp	67	59	68	60	65	71	69	61	
440-174234-1 - RA	Outfall001_20170121_Comp		55							
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65	

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174234-1	Outfall001_20170121_Comp	57	60	58	79	70	75	92	61
440-174234-1 - RA	Outfall001_20170121_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174234-1	Outfall001_20170121_Comp		57		60		58	79	
440-174234-1 - RA	Outfall001_20170121_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)	
440-174234-1	Outfall001_20170121_Comp		70		75		92	
440-174234-1 - RA	Outfall001_20170121_Comp							
MB 320-147877/1-A	Method Blank		69		78		96	

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174234-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-174234-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170121_Comp	440-174234-1	N/A	WM	1/21/17 11:40 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174234-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The alpha detector efficiency was less than 20%; therefore, the result for radium-226 was qualified as estimated (J) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Radium-228 was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample. Radium-226 not different from the method blank at the 5% level of confidence and was therefore qualified as estimated (J) in the site sample. There were no other analytes detected in the method blank at a level to require qualification of the site samples.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on the site sample for cesium-137. The duplicate result was in agreement with the parent sample and no qualifications were required.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:



III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401742342

Analysis Method E900

Sample Name Outfall001_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:40:00 AM Validation Level: 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	9.78	2.64	2.10	2.10	pCi/L			
Gross Beta Analytes	GROSSBETA	3.44	0.964	1.03	1.03	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall001_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:40:00 AM Validation Level: 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	1.26	11.0	18.6	18.6	pCi/L	U	U	
Potassium-40	13966-00-2	-82.0	138	201	201	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall001_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:40:00 AM Validation Level: 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.981	0.386	0.416	0.416	pCi/L		J	B, *III, DNQ

Analysis Method E904.0

Sample Name Outfall001_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:40:00 AM Validation Level: 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.834	0.355	0.487	0.487	pCi/L		U	B

Analysis Method E905.0

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0636	0.278	0.491	0.491	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-43.2	185	342	342	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall001_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-174234-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.807	0.753	0.902	0.902	pCi/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174234-2

Client Project/Site: Annual Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/22/2017 7:39:26 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/22/2017 7:39:26 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174234-1	Outfall001_20170121_Comp	Water	01/21/17 11:40	01/22/17 04:15

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Job ID: 440-174234-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174234-2

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 1.3° C, 1.4° C, 1.4° C, 1.4° C, 1.5° C, 1.7° C and 1.9° C.

RAD

Method(s) PrecSep_0: Radium-228 Prep Batch 160-290359:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: Outfall001_20170121_Comp (440-174234-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium-226 Prep Batch 160-290358:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: Outfall001_20170121_Comp (440-174234-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences. Outfall001_20170121_Comp (440-174234-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	9.78		2.40	2.64	3.00	2.10	pCi/L	02/14/17 09:45	02/19/17 20:19	1
Gross Beta	3.44		0.901	0.964	4.00	1.03	pCi/L	02/14/17 09:45	02/19/17 20:19	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.26	U	11.0	11.0	20.0	18.6	pCi/L	01/26/17 14:59	01/26/17 16:14	1
Potassium-40	-82.0	U	138	138		201	pCi/L	01/26/17 14:59	01/26/17 16:14	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.981		0.375	0.386	1.00	0.416	pCi/L	01/31/17 18:03	02/22/17 06:35	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	71.1		40 - 110					01/31/17 18:03	02/22/17 06:35	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.834		0.347	0.355	1.00	0.487	pCi/L	01/31/17 18:30	02/21/17 13:13	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	71.1		40 - 110					01/31/17 18:30	02/21/17 13:13	1
<i>Y Carrier</i>	83.7		40 - 110					01/31/17 18:30	02/21/17 13:13	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0636	U	0.278	0.278	3.00	0.491	pCi/L	01/31/17 11:55	02/13/17 17:07	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	81.9		40 - 110					01/31/17 11:55	02/13/17 17:07	1
<i>Y Carrier</i>	96.1		40 - 110					01/31/17 11:55	02/13/17 17:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-43.2	U	185	185	500	342	pCi/L	02/14/17 17:37	02/15/17 01:45	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Total Uranium	0.807	U	0.751	0.753	1.00	0.902	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	67.7		30 - 110					02/01/17 09:37	02/14/17 15:44	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Client Sample ID: Outfall001_20170121_Comp

Lab Sample ID: 440-174234-1

Date Collected: 01/21/17 11:40

Matrix: Water

Date Received: 01/22/17 04:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292252	02/14/17 09:45	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	293157	02/19/17 20:19	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289225	01/26/17 16:14	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	290358	01/31/17 18:03	AS	TAL SL
Total/NA	Analysis	903.0		1			293874	02/22/17 06:35	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	290359	01/31/17 18:30	AS	TAL SL
Total/NA	Analysis	904.0		1			293668	02/21/17 13:13	RTM	TAL SL
Total/NA	Prep	PrecSep-7			501.39 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:07	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	292341	02/14/17 17:37	JDL	TAL SL
Total/NA	Analysis	906.0		1			292562	02/15/17 01:45	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.13 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292512	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292252/1-A
Matrix: Water
Analysis Batch: 293156

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292252

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.5587	U	0.742	0.744	3.00	1.24	pCi/L	02/14/17 09:45	02/19/17 20:13	1
Gross Beta	-0.1873	U	0.552	0.552	4.00	0.997	pCi/L	02/14/17 09:45	02/19/17 20:13	1

Lab Sample ID: LCS 160-292252/2-A
Matrix: Water
Analysis Batch: 293156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	36.80		5.61	3.00	1.69	pCi/L	74	73 - 133

Lab Sample ID: LCSB 160-292252/3-A
Matrix: Water
Analysis Batch: 293156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.1	94.91		10.0	4.00	1.14	pCi/L	104	75 - 125

Lab Sample ID: 440-174110-G-1-I MS
Matrix: Water
Analysis Batch: 293157

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	0.552	U	49.9	42.20		5.86	3.00	1.26	pCi/L	85	60 - 140

Lab Sample ID: 440-174110-G-1-J MSD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	0.552	U	49.9	42.50		5.88	3.00	1.39	pCi/L	85	60 - 140	0.03	1

Lab Sample ID: 440-174110-G-1-K MSBT
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	1.23		91.1	91.41		9.64	4.00	1.04	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174110-G-1-L MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	1.23		91.1	91.09		9.62	4.00	0.941	pCi/L	99	60 - 140	0.02	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-1 DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Outfall001_20170121_Comp
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L	0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L	0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290358/1-A
Matrix: Water
Analysis Batch: 293875

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290358

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.04186	U	0.150	0.150	1.00	0.321	pCi/L	01/31/17 18:03	02/22/17 06:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		40 - 110					01/31/17 18:03	02/22/17 06:29	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290358/2-A
Matrix: Water
Analysis Batch: 293875

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290358

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	7.114		0.997	1.00	0.287	pCi/L	118	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	89.7		40 - 110							

Lab Sample ID: LCSD 160-290358/3-A
Matrix: Water
Analysis Batch: 293875

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 290358

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	6.01	7.099		0.980	1.00	0.261	pCi/L	118	68 - 137	0.01	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	92.0		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290359/1-A
Matrix: Water
Analysis Batch: 293678

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290359

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.6176		0.276	0.282	1.00	0.395	pCi/L	01/31/17 18:30	02/21/17 13:10	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	90.3		40 - 110							
Y Carrier	81.9		40 - 110							
								Prepared	Analyzed	Dil Fac
								01/31/17 18:30	02/21/17 13:10	1
								01/31/17 18:30	02/21/17 13:10	1

Lab Sample ID: LCS 160-290359/2-A
Matrix: Water
Analysis Batch: 293678

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290359

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	15.92		1.72	1.00	0.394	pCi/L	115	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	89.7		40 - 110						
Y Carrier	78.5		40 - 110						

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-290359/3-A
Matrix: Water
Analysis Batch: 293678

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 290359

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.8	13.73		1.49	1.00	0.353	pCi/L	99	56 - 140	0.68	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	92.0		40 - 110								
Y Carrier	84.5		40 - 110								

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1
Carrier	%Yield	MB Qualifier	Limits							
Sr Carrier	84.3		40 - 110							
Y Carrier	98.7		40 - 110							

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
Carrier	%Yield	MS Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
Carrier	%Yield	MSD Qualifier	MSD Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-292341/1-A
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292341

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-30.63	U	188	188	500	346	pCi/L	02/14/17 17:37	02/14/17 23:20	1

Lab Sample ID: LCS 160-292341/2-A
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292341

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2896		456	500	336	pCi/L	98	74 - 114

Lab Sample ID: 440-174110-F-1-H MS
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292341

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	455		2950	3081		489	500	368	pCi/L	89	67 - 130

Lab Sample ID: 440-174110-F-1-I MSD
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292341

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	455		2950	3086		466	500	324	pCi/L	89	67 - 130	0.01	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110	02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	45.3		30 - 110

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65 - 146
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68 - 143

Tracer	MS %Yield	MS Qualifier	Limits
Uranium-232	78.6		30 - 110

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146	0.04	1
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143	0.29	1

Tracer	MSD %Yield	MSD Qualifier	Limits
Uranium-232	84.1		30 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	78.6		30 - 110								

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual								
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146	0.22	1
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143	0.35	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	86.7		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-1 DU	Outfall001_20170121_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	PrecSep-21	
MB 160-290358/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290358/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-290358/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 290359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	PrecSep_0	
MB 160-290359/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290359/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-290359/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	Evaporation	
MB 160-292252/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292252/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292252/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174110-G-1-I MS	Matrix Spike	Total/NA	Water	Evaporation	
440-174110-G-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-174110-G-1-K MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-174110-G-1-L MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 292341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-1	Outfall001_20170121_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Rad (Continued)

Prep Batch: 292341 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-292341/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-292341/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174110-F-1-H MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174110-F-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174234-2

Login Number: 174234

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174234-2

Login Number: 174234

List Number: 3

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/24/17 03:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0,19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174234-1	Outfall001_20170121_Comp	71.1
LCS 160-290358/2-A	Lab Control Sample	89.7
LCSD 160-290358/3-A	Lab Control Sample Dup	92.0
MB 160-290358/1-A	Method Blank	90.3

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174234-1	Outfall001_20170121_Comp	71.1	83.7
LCS 160-290359/2-A	Lab Control Sample	89.7	78.5
LCSD 160-290359/3-A	Lab Control Sample Dup	92.0	84.5
MB 160-290359/1-A	Method Blank	90.3	81.9

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174110-G-1-E MS	Matrix Spike	84.4	98.3
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9
440-174234-1	Outfall001_20170121_Comp	81.9	96.1
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-F-1-E MS	Matrix Spike	78.6
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1
440-174234-1	Outfall001_20170121_Comp	67.7
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 001 Comp

TestAmerica Job ID: 440-174234-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175837-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 27, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175837-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170207_ Grab	440-175837-1	N/A	Water	2/7/2017 11:15:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175837-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170207 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

III.5. **INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. **COMPOUND IDENTIFICATION**

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. **TENTATIVELY IDENTIFIED COMPOUNDS**

The laboratory did not report TICs for this SDG.

III.9. **SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.

IV. **VARIOUS METHODS — GENERAL CHEMISTRY**

Marcia Hilchey of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. **HOLDING TIMES**

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. **CALIBRATION**

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.3.1. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.3.2. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis; no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401758371

Analysis Method E120.1

Sample Name Outfall001_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-175837-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	150	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall001_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-175837-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.5	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall001_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-175837-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall001_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-175837-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175837-1

Client Project/Site: Routine Outfall 001 Grab

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/23/2017 2:48:19 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/23/2017 2:48:19 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175837-1	Outfall001_20170207_Grab	Water	02/07/17 11:15	02/07/17 15:10
440-175837-3	TB-20170207	Water	02/07/17 11:15	02/07/17 15:10

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Job ID: 440-175837-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175837-1**

Comments

No additional comments.

Receipt

The samples were received on 2/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.6° C, 1.7° C, 2.5° C, 2.7° C and 3.1° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-389416 and analytical batch 440-389727. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Client Sample ID: Outfall001_20170207_Grab

Lab Sample ID: 440-175837-1

Date Collected: 02/07/17 11:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 12:21	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 12:21	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 12:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120					02/10/17 12:21	1
Dibromofluoromethane (Surr)	108		76 - 132					02/10/17 12:21	1
Toluene-d8 (Surr)	104		80 - 128					02/10/17 12:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.5	1.5	mg/L		02/20/17 18:47	02/22/17 00:11	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	150		1.0	1.0	umhos/cm			02/14/17 11:00	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/08/17 09:56	1

Client Sample ID: TB-20170207

Lab Sample ID: 440-175837-3

Date Collected: 02/07/17 11:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 12:50	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 12:50	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 12:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					02/10/17 12:50	1
Dibromofluoromethane (Surr)	105		76 - 132					02/10/17 12:50	1
Toluene-d8 (Surr)	104		80 - 128					02/10/17 12:50	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Client Sample ID: Outfall001_20170207_Grab

Lab Sample ID: 440-175837-1

Date Collected: 02/07/17 11:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	387596	02/10/17 12:21	WC	TAL IRV
Total/NA	Analysis	120.1		1			388197	02/14/17 11:00	XL	TAL IRV
Total/NA	Prep	1664A			915 mL	1000 mL	389416	02/20/17 18:47	JSS	TAL IRV
Total/NA	Analysis	1664A		1			389727	02/22/17 00:11	BAW	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	387196	02/08/17 09:56	RB	TAL IRV

Client Sample ID: TB-20170207

Lab Sample ID: 440-175837-3

Date Collected: 02/07/17 11:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	387596	02/10/17 12:50	WC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387596/4
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 08:27	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 08:27	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 08:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120		02/10/17 08:27	1
Dibromofluoromethane (Surr)	105		76 - 132		02/10/17 08:27	1
Toluene-d8 (Surr)	103		80 - 128		02/10/17 08:27	1

Lab Sample ID: LCS 440-387596/5
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	27.2		ug/L		109	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.1		ug/L		100	63 - 130
1,1,2-Trichloroethane	25.0	28.0		ug/L		112	70 - 130
1,1-Dichloroethane	25.0	25.6		ug/L		102	64 - 130
1,1-Dichloroethene	25.0	25.2		ug/L		101	70 - 130
1,2-Dichlorobenzene	25.0	25.5		ug/L		102	70 - 130
1,2-Dichloroethane	25.0	26.5		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	24.3		ug/L		97	67 - 130
1,3-Dichlorobenzene	25.0	27.2		ug/L		109	70 - 130
1,4-Dichlorobenzene	25.0	25.0		ug/L		100	70 - 130
Benzene	25.0	24.8		ug/L		99	68 - 130
Bromoform	25.0	27.9		ug/L		112	60 - 148
Bromomethane	25.0	23.2		ug/L		93	64 - 139
Carbon tetrachloride	25.0	27.9		ug/L		111	60 - 150
Chlorobenzene	25.0	25.4		ug/L		102	70 - 130
Dibromochloromethane	25.0	27.8		ug/L		111	69 - 145
Chloroethane	25.0	24.5		ug/L		98	64 - 135
Chloroform	25.0	26.3		ug/L		105	70 - 130
Chloromethane	25.0	25.0		ug/L		100	47 - 140
cis-1,3-Dichloropropene	25.0	26.7		ug/L		107	70 - 133
Bromodichloromethane	25.0	26.9		ug/L		107	70 - 132
Ethylbenzene	25.0	25.2		ug/L		101	70 - 130
Methylene Chloride	25.0	24.5		ug/L		98	52 - 130
Tetrachloroethene	25.0	27.8		ug/L		111	70 - 130
Toluene	25.0	25.1		ug/L		100	70 - 130
trans-1,2-Dichloroethene	25.0	26.7		ug/L		107	70 - 130
trans-1,3-Dichloropropene	25.0	26.3		ug/L		105	70 - 132
Vinyl chloride	25.0	22.4		ug/L		90	59 - 133
Trichloroethene	25.0	27.0		ug/L		108	70 - 130
cis-1,2-Dichloroethene	25.0	26.8		ug/L		107	70 - 133
Naphthalene	25.0	28.1		ug/L		112	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-387596/5

Matrix: Water

Analysis Batch: 387596

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	103		80 - 128

Lab Sample ID: 440-175530-C-1 MS

Matrix: Water

Analysis Batch: 387596

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
1,1,1-Trichloroethane	ND		25.0	28.0		ug/L		112	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	26.3		ug/L		105	63 - 130
1,1,2-Trichloroethane	ND		25.0	28.9		ug/L		116	70 - 130
1,1-Dichloroethane	ND		25.0	27.1		ug/L		108	65 - 130
1,1-Dichloroethene	ND		25.0	25.9		ug/L		104	70 - 130
1,2-Dichlorobenzene	ND		25.0	26.6		ug/L		106	70 - 130
1,2-Dichloroethane	ND		25.0	28.4		ug/L		114	56 - 146
1,2-Dichloropropane	ND		25.0	26.2		ug/L		105	69 - 130
1,3-Dichlorobenzene	ND		25.0	28.1		ug/L		112	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
Benzene	ND		25.0	25.9		ug/L		103	66 - 130
Bromoform	ND		25.0	28.9		ug/L		116	59 - 150
Bromomethane	ND		25.0	24.4		ug/L		97	62 - 131
Carbon tetrachloride	ND		25.0	29.2		ug/L		117	60 - 150
Chlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130
Dibromochloromethane	ND		25.0	28.5		ug/L		114	70 - 148
Chloroethane	ND		25.0	25.7		ug/L		103	68 - 130
Chloroform	ND		25.0	27.6		ug/L		110	70 - 130
Chloromethane	ND		25.0	25.6		ug/L		102	39 - 144
cis-1,3-Dichloropropene	ND		25.0	27.5		ug/L		110	70 - 133
Bromodichloromethane	ND		25.0	28.4		ug/L		114	70 - 138
Ethylbenzene	ND		25.0	25.6		ug/L		102	70 - 130
Methylene Chloride	ND		25.0	26.4		ug/L		106	52 - 130
Tetrachloroethene	ND		25.0	27.7		ug/L		111	70 - 137
Toluene	ND		25.0	25.5		ug/L		102	70 - 130
trans-1,2-Dichloroethene	ND		25.0	27.8		ug/L		111	70 - 130
trans-1,3-Dichloropropene	ND		25.0	27.6		ug/L		110	70 - 138
Vinyl chloride	ND		25.0	22.4		ug/L		90	50 - 137
Trichloroethene	ND		25.0	28.7		ug/L		115	70 - 130
cis-1,2-Dichloroethene	ND		25.0	28.1		ug/L		113	70 - 130
Naphthalene	ND		25.0	29.7		ug/L		119	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	101		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175530-C-1 MSD

Matrix: Water

Analysis Batch: 387596

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,1,1-Trichloroethane	ND		25.0	27.7		ug/L		111	70 - 130	1	20
1,1,1,2-Tetrachloroethane	ND		25.0	25.4		ug/L		102	63 - 130	3	30
1,1,2-Trichloroethane	ND		25.0	28.8		ug/L		115	70 - 130	0	25
1,1-Dichloroethane	ND		25.0	26.7		ug/L		107	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	26.3		ug/L		105	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	28.5		ug/L		114	56 - 146	0	20
1,2-Dichloropropane	ND		25.0	26.1		ug/L		105	69 - 130	0	20
1,3-Dichlorobenzene	ND		25.0	27.9		ug/L		112	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130	1	20
Benzene	ND		25.0	25.4		ug/L		102	66 - 130	2	20
Bromoform	ND		25.0	28.9		ug/L		116	59 - 150	0	25
Bromomethane	ND		25.0	24.4		ug/L		98	62 - 131	0	25
Carbon tetrachloride	ND		25.0	28.6		ug/L		115	60 - 150	2	25
Chlorobenzene	ND		25.0	25.7		ug/L		103	70 - 130	0	20
Dibromochloromethane	ND		25.0	28.7		ug/L		115	70 - 148	1	25
Chloroethane	ND		25.0	25.3		ug/L		101	68 - 130	1	25
Chloroform	ND		25.0	26.9		ug/L		108	70 - 130	2	20
Chloromethane	ND		25.0	26.9		ug/L		107	39 - 144	5	25
cis-1,3-Dichloropropene	ND		25.0	28.0		ug/L		112	70 - 133	2	20
Bromodichloromethane	ND		25.0	28.6		ug/L		114	70 - 138	0	20
Ethylbenzene	ND		25.0	25.7		ug/L		103	70 - 130	0	20
Methylene Chloride	ND		25.0	25.7		ug/L		103	52 - 130	3	20
Tetrachloroethene	ND		25.0	27.7		ug/L		111	70 - 137	0	20
Toluene	ND		25.0	25.7		ug/L		103	70 - 130	1	20
trans-1,2-Dichloroethene	ND		25.0	27.1		ug/L		108	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	27.0		ug/L		108	70 - 138	2	25
Vinyl chloride	ND		25.0	22.4		ug/L		89	50 - 137	0	30
Trichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	2	20
cis-1,2-Dichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	0	20
Naphthalene	ND		25.0	28.7		ug/L		115	60 - 140	3	30

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-388197/3

Matrix: Water

Analysis Batch: 388197

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Specific Conductance	ND		1.0	1.0	umhos/cm			02/14/17 11:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-388197/4
Matrix: Water
Analysis Batch: 388197

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	778		umhos/cm		101	90 - 110

Lab Sample ID: 440-176291-A-1 DU
Matrix: Water
Analysis Batch: 388197

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	85		83.8		umhos/cm		0.8	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-389416/1-A
Matrix: Water
Analysis Batch: 389727

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389416

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/20/17 18:47	02/22/17 00:11	1

Lab Sample ID: LCS 440-389416/2-A
Matrix: Water
Analysis Batch: 389727

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389416

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.5		mg/L		89	78 - 114

Lab Sample ID: LCSD 440-389416/3-A
Matrix: Water
Analysis Batch: 389727

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389416

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	36.9		mg/L		92	78 - 114	4	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

GC/MS VOA

Analysis Batch: 387596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175837-1	Outfall001_20170207_Grab	Total/NA	Water	624	
440-175837-3	TB-20170207	Total/NA	Water	624	
MB 440-387596/4	Method Blank	Total/NA	Water	624	
LCS 440-387596/5	Lab Control Sample	Total/NA	Water	624	
440-175530-C-1 MS	Matrix Spike	Total/NA	Water	624	
440-175530-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 387196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175837-1	Outfall001_20170207_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 388197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175837-1	Outfall001_20170207_Grab	Total/NA	Water	120.1	
MB 440-388197/3	Method Blank	Total/NA	Water	120.1	
LCS 440-388197/4	Lab Control Sample	Total/NA	Water	120.1	
440-176291-A-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 389416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175837-1	Outfall001_20170207_Grab	Total/NA	Water	1664A	
MB 440-389416/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-389416/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-389416/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 389727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175837-1	Outfall001_20170207_Grab	Total/NA	Water	1664A	389416
MB 440-389416/1-A	Method Blank	Total/NA	Water	1664A	389416
LCS 440-389416/2-A	Lab Control Sample	Total/NA	Water	1664A	389416
LCSD 440-389416/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	389416

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-175837-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America

808PTLUX

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92106 Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-280-3289 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 001 Grab		Field Readings Meter serial # Field Readings: (Include units) Time of Readings: 11:10 DO 5.81 mg/L pH 7.55 pH unit Temp 14.55 C / 58.19 F	
Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Field readings QC Checked by: <i>[Signature]</i> Date/Time: 2.7.17 / 11:20	
Sampler: Dan Smith		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Comments 09/11/17 09/11/17	
Sample Description		Sample I.D.		Sampling Date/Time	
Outfall 001		Outfall001_20170207_Grab		2/7/2017 / 11:15	
Trip Blanks TB-20170207		Outfall001_20170207_Grab_Extra		2/7/2017 / 11:15	
09016		09016		09016	
09017		09017		09017	
09018		09018		09018	
09019		09019		09019	
09020		09020		09020	
09021		09021		09021	
09022		09022		09022	
09023		09023		09023	
09024		09024		09024	
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09026		09026		09026	
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09040		09040		09040	
09041		09041		09041	
09042		09042		09042	
09043		09043		09043	
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09046		09046		09046	
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09187		09187		09187	
09188		09188		09188	
09189		09189		09189	
09190		09190		09190	
09191		09191		09191	
09192					

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175837-1

Login Number: 175837

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175985-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-175985-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170208_ Comp	440-175985-2	N/A	Water	2/8/17 8:20 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall001_20170208_ Comp_F	440-175985-1	N/A	Water	2/8/17 8:20 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175985-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.

The following issue was noted:

- The correction on the original COC was not initialed and dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, OCDD, and OCDF, and detects for totals TCDF, HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD and TCDF in the method blank were the same peaks comprising the totals in sample OUTFALL001_20170208_COMP. The results for totals HpCDD and TCDF were qualified as nondetected (U).

The reviewer verified that peaks comprising the results for the remaining totals in the sample included more peaks than the method blank totals. The sample result for totals HpCDF, HxCDD, and HxCDF were therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Results for isomers 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, and 1,2,3,4,7,8-HxCDF reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals HxCDF and TCDD containing EMPC peaks were qualified as estimated (J).

IV. METHODS 200.8 AND 245.1— METALS AND MERCURY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 2, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall001_20170208_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 5 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES/LABORATORY CONTROL SAMPLE DUPLICATES

LCS/LCSD recoveries and RPDs were within the method control limits of 85-115% and $\leq 20\%$, respectively.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall001_20170208_Comp_F for mercury. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. The mercury recoveries and RPD were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 5, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.

V.3.2. LABORATORY CONTROL SAMPLES

Recovery of alpha BHC was within the laboratory control limits.



V.3.3. **SURROGATE RECOVERY**

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy based on the LCS results.

V.4. **FIELD QC SAMPLES**

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

V.5. **COMPOUND IDENTIFICATION**

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. **EPA METHOD 314.0 — PERCHLORATE**

Marcia Hilchey of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. **HOLDING TIMES**

The analytical holding time, 28 days, was met.

VI.2. **CALIBRATION**

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.



VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. The reported nondetect is valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met for applicable target compounds. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits. The reviewer noted target compound 2,4-dinitrotoluene was not spiked in the LCS/LCSD.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas, with one exception. The recovery of 10% for perylene-d12 in the sample did not affect reported sample data, as the internal standard was not associated with the requested target compounds.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, *n*-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.



VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 2, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540C and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

VIII.1. HOLDING TIMES

Chronic toxicity was analyzed 16 hours past the 36 hour holding time requirement. The result for chronic toxicity was qualified as estimated (J).

The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, sulfate and ammonia
- 28 Days for TOC
- 48 hours for BOD
- 48 hours for turbidity
- 48 hours for MBAS
- 48 hours for nitrate and nitrite as N

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES/LABORATORY CONTROL SAMPLE DUPLICATES

LCS/LCSD recoveries and RPDs were within the laboratory control limits.



VIII.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were within the laboratory control limits.

VIII.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analysis recoveries and RPDs were within the laboratory control limits.

VIII.4. **SAMPLE RESULT VERIFICATION**

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

The reviewer noted that no raw data was presented in the SDG for the turbidity, TDS, TSS and BOD analyses.

VIII.5. **FIELD QC SAMPLES**

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401759851

Analysis Method E1613B

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000027	0.000096	0.00000018	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000026	0.000096	0.00000025	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000019	0.000048	0.00000014	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000032	0.000048	0.00000021	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000041	0.000048	0.00000016	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000024	0.000048	0.00000013	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000029	0.000048	0.00000011	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000041	0.000048	0.00000011	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000030	0.000048	0.00000011	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000020	0.000048	0.00000010	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000041	0.000048	0.000000085	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000048	0.00000016	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000029	0.000048	0.00000017	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000037	0.000048	0.000000098	ug/L	J,DXq	UJ	*III
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000048	0.00000016	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000096	0.0000022	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000052	0.000096	0.00000012	ug/L	J,DXMBq	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000096	0.00000016	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000032	0.000048	0.00000015	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000064	0.000048	0.00000021	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000012	0.000048	0.00000011	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000013	0.000048	0.000000099	ug/L	J,DXMBq	J	B, DNQ, *III

Friday, April 07, 2017

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000048	0.00000016	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000029	0.000048	0.00000017	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000084	0.0000096	0.00000012	ug/L	J,DXMBq	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000027	0.0000096	0.00000016	ug/L	J,DXq	J	DNQ, *III

Analysis Method E180.1

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	32	0.40	0.16	NTU			

Analysis Method E200.8

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.3	2.0	0.50	ug/L			
Lead	T	7439-92-1	0.67	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	T	7782-49-2	0.57	2.0	0.50	ug/L	J,DX	J	DNQ
Zinc	T	7440-66-6	11	20	2.5	ug/L	J,DX	J	DNQ

Sample Name Outfall001_20170208_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	6.1	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	3.5	20	2.5	ug/L	J,DXQP	J	DNQ,H

Analysis Method E245.1**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall001_20170208_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	6.8	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.86	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.86	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	6.7	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0050	0.0025	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	5.94	0.495	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	4.95	1.98	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.95	1.98	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	4.95	0.990	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	4.95	0.990	ug/L	U	U	

Analysis Method EPA-821-R-02-013**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	9.38			% SURV		J	H

Analysis Method SM2540C**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	130	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	7.9	1.4	0.71	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 8:20:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method **SM4500-NH3G**

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.1	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.10	0.10	0.050	mg/L			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175985-1

Client Project/Site: Routine Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 3:40:06 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 3:40:06 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175985-1	Outfall001_20170208_Comp_F	Water	02/08/17 08:20	02/08/17 13:30
440-175985-2	Outfall001_20170208_Comp	Water	02/08/17 08:20	02/08/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Job ID: 440-175985-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175985-1**

Comments

No additional comments.

Receipt

The samples were received on 2/8/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.1° C, 1.2° C, 1.4° C, 1.6° C, 1.7° C, 2.4° C, 2.4° C and 2.9° C.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-387389 and analytical batch 440-388032. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: Internal standard (ISTD) response for perylene-d12 for the following samples was outside acceptance criteria: Outfall001_20170208_Comp (440-175985-2). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Client Sample ID: Outfall001_20170208_Comp_F

Lab Sample ID: 440-175985-1

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L	-	02/14/17 18:13	02/15/17 12:43	1
Copper	6.1	QP	2.0	0.50	ug/L	-	02/14/17 18:13	02/15/17 12:43	1
Lead	ND	QP	1.0	0.50	ug/L	-	02/14/17 18:13	02/15/17 12:43	1
Selenium	ND	QP	2.0	0.50	ug/L	-	02/14/17 18:13	02/15/17 12:43	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L	-	02/14/17 21:33	02/16/17 15:42	1

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		5.94	0.495	ug/L	-	02/09/17 11:35	02/13/17 19:02	1
Bis(2-ethylhexyl) phthalate	ND		4.95	1.98	ug/L	-	02/09/17 11:35	02/13/17 19:02	1
N-Nitrosodimethylamine	ND		4.95	0.990	ug/L	-	02/09/17 11:35	02/13/17 19:02	1
Pentachlorophenol	ND		4.95	0.990	ug/L	-	02/09/17 11:35	02/13/17 19:02	1
2,4-Dinitrotoluene	ND		4.95	1.98	ug/L	-	02/09/17 11:35	02/13/17 19:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	69		40 - 120	02/09/17 11:35	02/13/17 19:02	1
2-Fluorobiphenyl	64		50 - 120	02/09/17 11:35	02/13/17 19:02	1
2-Fluorophenol	56		30 - 120	02/09/17 11:35	02/13/17 19:02	1
Nitrobenzene-d5	63		45 - 120	02/09/17 11:35	02/13/17 19:02	1
Phenol-d6	56		35 - 120	02/09/17 11:35	02/13/17 19:02	1
Terphenyl-d14	80		37 - 144	02/09/17 11:35	02/13/17 19:02	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L	-	02/09/17 11:08	02/11/17 13:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	62		10 - 150	02/09/17 11:08	02/11/17 13:31	1
DCB Decachlorobiphenyl (Surr)	71		18 - 134	02/09/17 11:08	02/11/17 13:31	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.8		0.50	0.25	mg/L	-		02/08/17 21:56	1
Nitrate as N	0.86		0.11	0.055	mg/L	-		02/08/17 21:56	1
Nitrite as N	ND		0.15	0.070	mg/L	-		02/08/17 21:56	1
Sulfate	6.7		0.50	0.25	mg/L	-		02/08/17 21:56	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L	-		02/09/17 17:07	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.86		0.15	0.070	mg/L	-		02/21/17 10:28	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,7,8-PeCDD	0.00000029	J,DX	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
2,3,4,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,4,7,8-HxCDD	0.00000029	J,DX	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,6,7,8-HxCDD	0.00000030	J,DX MB q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,7,8,9-HxCDD	0.00000041	J,DX MB q	0.000048	0.0000000	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,4,7,8-HxCDF	0.00000024	J,DX q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,6,7,8-HxCDF	0.00000041	J,DX q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,7,8,9-HxCDF	0.00000020	J,DX MB q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
2,3,4,6,7,8-HxCDF	0.00000037	J,DX q	0.000048	0.0000000	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,4,6,7,8-HpCDD	0.00000032	J,DX MB	0.000048	0.0000002	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,4,6,7,8-HpCDF	0.00000019	J,DX MB q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
1,2,3,4,7,8,9-HpCDF	0.00000041	J,DX MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
OCDD	0.0000026	J,DX MB	0.000096	0.0000002	ug/L		02/14/17 14:51	02/17/17 09:23	1
OCDF	0.0000027	J,DX MB	0.000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total TCDD	0.00000027	J,DX q	0.0000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total TCDF	0.00000084	J,DX MB q	0.0000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total PeCDD	0.00000029	J,DX	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total PeCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total HxCDD	0.0000013	J,DX MB q	0.000048	0.0000000	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total HxCDF	0.0000012	J,DX MB q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total HpCDD	0.0000064	J,DX MB	0.000048	0.0000002	ug/L		02/14/17 14:51	02/17/17 09:23	1
Total HpCDF	0.0000032	J,DX MB q	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 09:23	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-2,3,7,8-TCDD	75		25 - 164			02/14/17 14:51	02/17/17 09:23	1	
13C-2,3,7,8-TCDF	70		24 - 169			02/14/17 14:51	02/17/17 09:23	1	
13C-1,2,3,7,8-PeCDD	86		25 - 181			02/14/17 14:51	02/17/17 09:23	1	
13C-1,2,3,7,8-PeCDF	75		24 - 185			02/14/17 14:51	02/17/17 09:23	1	
13C-2,3,4,7,8-PeCDF	80		21 - 178			02/14/17 14:51	02/17/17 09:23	1	
13C-1,2,3,4,7,8-HxCDD	83		32 - 141			02/14/17 14:51	02/17/17 09:23	1	

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	85		28 - 130	02/14/17 14:51	02/17/17 09:23	1
13C-1,2,3,4,7,8-HxCDF	80		26 - 152	02/14/17 14:51	02/17/17 09:23	1
13C-1,2,3,6,7,8-HxCDF	84		26 - 123	02/14/17 14:51	02/17/17 09:23	1
13C-1,2,3,7,8,9-HxCDF	78		29 - 147	02/14/17 14:51	02/17/17 09:23	1
13C-2,3,4,6,7,8-HxCDF	87		28 - 136	02/14/17 14:51	02/17/17 09:23	1
13C-1,2,3,4,6,7,8-HpCDD	87		23 - 140	02/14/17 14:51	02/17/17 09:23	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	02/14/17 14:51	02/17/17 09:23	1
13C-1,2,3,4,7,8,9-HpCDF	89		26 - 138	02/14/17 14:51	02/17/17 09:23	1
13C-OCDD	90		17 - 157	02/14/17 14:51	02/17/17 09:23	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	02/14/17 14:51	02/17/17 09:23	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000096	0.0000022	ug/L		02/14/17 14:51	02/18/17 01:18	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C-2,3,7,8-TCDF	67		24 - 169	02/14/17 14:51	02/18/17 01:18	1			
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
37Cl4-2,3,7,8-TCDD	88		35 - 197	02/14/17 14:51	02/18/17 01:18	1			

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/18/17 09:59	02/20/17 01:05	1
Copper	3.3		2.0	0.50	ug/L		02/18/17 09:59	02/20/17 01:05	1
Lead	0.67	J,DX	1.0	0.50	ug/L		02/18/17 09:59	02/20/17 01:05	1
Selenium	0.57	J,DX	2.0	0.50	ug/L		02/18/17 09:59	02/20/17 01:05	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 17:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	32		0.40	0.16	NTU			02/09/17 16:16	4
Total Dissolved Solids	130		10	5.0	mg/L			02/14/17 10:01	1
Total Suspended Solids	7.9		1.4	0.71	mg/L			02/15/17 14:18	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:51	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/16/17 17:18	1
Methylene Blue Active Substances	0.10		0.10	0.050	mg/L			02/10/17 01:11	1
Biochemical Oxygen Demand	1.1	J,DX	2.0	0.50	mg/L			02/09/17 16:04	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Client Sample ID: Outfall001_20170208_Comp_F

Lab Sample ID: 440-175985-1

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388279	02/14/17 18:13	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388477	02/15/17 12:43	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388279	02/14/17 18:13	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388664	02/15/17 12:43	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	388307	02/14/17 21:33	DB	TAL IRV
Dissolved	Analysis	245.1		1			388790	02/16/17 15:42	DB	TAL IRV

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			1010 mL	2.0 mL	387389	02/09/17 11:35	JC1	TAL IRV
Total/NA	Analysis	625		1			388032	02/13/17 19:02	DF	TAL IRV
Total/NA	Prep	608			1005 mL	2 mL	387433	02/09/17 11:08	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			387787	02/11/17 13:31	JM	TAL IRV
Total/NA	Analysis	300.0		1			387177	02/08/17 21:56	NTN	TAL IRV
Total/NA	Analysis	300.0		1			387178	02/08/17 21:56	NTN	TAL IRV
Total/NA	Analysis	314.0		1			387392	02/09/17 17:07	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			389519	02/21/17 10:28	TLN	TAL IRV
Total/NA	Prep	1613B			1042 mL	20 uL	150514	02/14/17 14:51	DXD	TAL SAC
Total/NA	Analysis	1613B		1			151022	02/17/17 09:23	ALM	TAL SAC
Total/NA	Prep	1613B	RA		1042 mL	20 uL	150514	02/14/17 14:51	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			151375	02/18/17 01:18	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	389069	02/18/17 09:59	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1			389235	02/20/17 01:05	EN	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388098	02/13/17 22:08	DB	TAL IRV
Total/NA	Analysis	245.1		1			388283	02/14/17 17:16	DB	TAL IRV
Total/NA	Analysis	180.1		4			387491	02/09/17 16:16	RB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	388181	02/14/17 10:01	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	700 mL	1000 mL	388484	02/15/17 14:18	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387906	02/13/17 14:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388090	02/13/17 20:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	388781	02/16/17 17:18	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	387570	02/10/17 01:11	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			387377	02/09/17 16:04	MMP	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387389/1-A

Matrix: Water

Analysis Batch: 388032

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 387389

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/09/17 09:24	02/13/17 14:14	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/09/17 09:24	02/13/17 14:14	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/09/17 09:24	02/13/17 14:14	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/09/17 09:24	02/13/17 14:14	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/09/17 09:24	02/13/17 14:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	78		40 - 120	02/09/17 09:24	02/13/17 14:14	1
2-Fluorobiphenyl	77		50 - 120	02/09/17 09:24	02/13/17 14:14	1
2-Fluorophenol	74		30 - 120	02/09/17 09:24	02/13/17 14:14	1
Nitrobenzene-d5	74		45 - 120	02/09/17 09:24	02/13/17 14:14	1
Phenol-d6	69		35 - 120	02/09/17 09:24	02/13/17 14:14	1
Terphenyl-d14	101		37 - 144	02/09/17 09:24	02/13/17 14:14	1

Lab Sample ID: LCS 440-387389/2-A

Matrix: Water

Analysis Batch: 388032

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 387389

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	7.392		ug/L		74	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	9.173		ug/L		92	10 - 150
N-Nitrosodimethylamine	10.0	7.322		ug/L		73	26 - 117
Pentachlorophenol	20.0	15.26		ug/L		76	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	77		40 - 120
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	58		30 - 120
Nitrobenzene-d5	74		45 - 120
Phenol-d6	57		35 - 120
Terphenyl-d14	88		37 - 144

Lab Sample ID: LCSD 440-387389/3-A

Matrix: Water

Analysis Batch: 388032

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 387389

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	10.0	7.872		ug/L		79	37 - 144	6	35
Bis(2-ethylhexyl) phthalate	10.0	8.713		ug/L		87	10 - 150	5	35
N-Nitrosodimethylamine	10.0	7.695		ug/L		77	26 - 117	5	35
Pentachlorophenol	20.0	16.69		ug/L		83	14 - 150	9	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	83		40 - 120
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	68		30 - 120
Nitrobenzene-d5	72		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-387389/3-A
Matrix: Water
Analysis Batch: 388032

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387389

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Phenol-d6	74		35 - 120
Terphenyl-d14	84		37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-387433/1-A
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/09/17 11:08	02/11/17 12:04	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	44		10 - 150	02/09/17 11:08	02/11/17 12:04	1
DCB Decachlorobiphenyl (Surr)	61		18 - 134	02/09/17 11:08	02/11/17 12:04	1

Lab Sample ID: LCS 440-387433/2-A
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Spike Added	LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
alpha-BHC	0.200	0.0927		ug/L		46	37 - 134

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	44		10 - 150
DCB Decachlorobiphenyl (Surr)	58		18 - 134

Lab Sample ID: 440-175633-H-1-B MS
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
alpha-BHC	ND		0.190	0.0913		ug/L		48	40 - 120

Surrogate	MS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	39		10 - 150
DCB Decachlorobiphenyl (Surr)	65		18 - 134

Lab Sample ID: 440-175633-J-1-A MSD
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec. Limits	RPD	Limit
				Result	Qualifier						
alpha-BHC	ND		0.190	0.0777		ug/L		41	40 - 120	16	30

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-175633-J-1-A MSD
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387433

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene	28		10 - 150
DCB Decachlorobiphenyl (Surr)	71		18 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-387177/4
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/08/17 11:06	1
Nitrite as N	ND		0.15	0.070	mg/L			02/08/17 11:06	1

Lab Sample ID: LCS 440-387177/2
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.16		mg/L		102	90 - 110
Nitrite as N	1.52	1.56		mg/L		103	90 - 110

Lab Sample ID: 440-175985-2 MS
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Outfall001_20170208_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.86		1.13	1.94		mg/L		96	80 - 120
Nitrite as N	ND		1.52	1.47		mg/L		97	80 - 120

Lab Sample ID: 440-175985-2 MSD
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Outfall001_20170208_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.86		1.13	1.93		mg/L		95	80 - 120	1	20
Nitrite as N	ND		1.52	1.45		mg/L		95	80 - 120	2	20

Lab Sample ID: MB 440-387178/4
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/08/17 11:06	1
Sulfate	ND		0.50	0.25	mg/L			02/08/17 11:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-387178/2
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.88		mg/L		98	90 - 110
Sulfate	5.00	5.30		mg/L		106	90 - 110

Lab Sample ID: 440-175985-2 MS
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Outfall001_20170208_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	6.8		5.00	11.6		mg/L		96	80 - 120
Sulfate	6.7		5.00	11.6		mg/L		98	80 - 120

Lab Sample ID: 440-175985-2 MSD
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Outfall001_20170208_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	6.8		5.00	11.6		mg/L		95	80 - 120	0	20
Sulfate	6.7		5.00	11.7		mg/L		99	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-387392/3
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/09/17 10:01	1

Lab Sample ID: LCS 440-387392/2
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	26.8		ug/L		107	85 - 115

Lab Sample ID: MRL 440-387392/5
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.55		ug/L		114	75 - 125

Lab Sample ID: 440-176078-B-1 MS
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	47		25.0	89.4	LM	ug/L		170	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: 440-176078-B-1 MSD
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	47		25.0	88.8	LM	ug/L		168	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,6,7,8-HxCDD	0.000000285	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8,9-HxCDD	0.000000400	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8,9-HxCDF	0.000000495	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,6,7,8-HpCDD	0.000000758	J,DX	0.000050	0.0000002	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,6,7,8-HpCDF	0.000000567	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,7,8,9-HpCDF	0.000000304	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
OCDD	0.00000307	J,DX q	0.00010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
OCDF	0.00000102	J,DX	0.00010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total TCDD	ND		0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total TCDF	0.00000155	J,DX q	0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total PeCDD	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total PeCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total HxCDD	0.000000685	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total HxCDF	0.000000495	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	0.00000201	J,DX	0.000050	0.0000002	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total HpCDF	0.000000871	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
				2					
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	66		25 - 164				02/14/17 14:51	02/17/17 05:32	1
13C-2,3,7,8-TCDF	65		24 - 169				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8-PeCDD	75		25 - 181				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8-PeCDF	67		24 - 185				02/14/17 14:51	02/17/17 05:32	1
13C-2,3,4,7,8-PeCDF	76		21 - 178				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,6,7,8-HxCDD	82		28 - 130				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147				02/14/17 14:51	02/17/17 05:32	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8,9-HpCDF	74		26 - 138				02/14/17 14:51	02/17/17 05:32	1
13C-OCDD	75		17 - 157				02/14/17 14:51	02/17/17 05:32	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				02/14/17 14:51	02/17/17 05:32	1

Lab Sample ID: LCS 320-150514/2-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000186		ug/L		93	67 - 158
2,3,7,8-TCDF	0.000200	0.000198	MB	ug/L		99	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000974		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000969		ug/L		97	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000965		ug/L		96	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000938		ug/L		94	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000980	MB	ug/L		98	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000863	MB	ug/L		86	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000909		ug/L		91	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000973		ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000958	MB	ug/L		96	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000979		ug/L		98	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000923	MB	ug/L		92	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000953	MB	ug/L		95	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000895	MB	ug/L		89	78 - 138
OCDD	0.00200	0.00187	MB	ug/L		93	78 - 144
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	72		20 - 175
13C-2,3,7,8-TCDF	70		22 - 152
13C-1,2,3,7,8-PeCDD	83		21 - 227
13C-1,2,3,7,8-PeCDF	74		21 - 192
13C-2,3,4,7,8-PeCDF	82		13 - 328
13C-1,2,3,4,7,8-HxCDD	81		21 - 193
13C-1,2,3,6,7,8-HxCDD	84		25 - 163
13C-1,2,3,4,7,8-HxCDF	80		19 - 202
13C-1,2,3,6,7,8-HxCDF	80		21 - 159
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-2,3,4,6,7,8-HxCDF	81		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	80		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	80		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	81		20 - 186
13C-OCDD	84		13 - 199

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	94		31 - 191

Lab Sample ID: LCSD 320-150514/3-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150514

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158	8	50
2,3,7,8-TCDF	0.000200	0.000208	MB	ug/L		104	75 - 158	5	50
1,2,3,7,8-PeCDD	0.00100	0.000969		ug/L		97	70 - 142	1	50
1,2,3,7,8-PeCDF	0.00100	0.000983		ug/L		98	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000986		ug/L		99	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000939		ug/L		94	70 - 164	0	50
1,2,3,6,7,8-HxCDD	0.00100	0.000976	MB	ug/L		98	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000848	MB	ug/L		85	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000923		ug/L		92	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.000964		ug/L		96	84 - 130	1	50
1,2,3,7,8,9-HxCDF	0.00100	0.000954	MB	ug/L		95	78 - 130	0	50
2,3,4,6,7,8-HxCDF	0.00100	0.000994		ug/L		99	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000921	MB	ug/L		92	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000953	MB	ug/L		95	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000899	MB	ug/L		90	78 - 138	0	50
OCDD	0.00200	0.00185	MB	ug/L		93	78 - 144	1	50
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170	0	50

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	63		20 - 175
13C-2,3,7,8-TCDF	62		22 - 152
13C-1,2,3,7,8-PeCDD	76		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-1,2,3,4,7,8-HxCDD	78		21 - 193
13C-1,2,3,6,7,8-HxCDD	84		25 - 163
13C-1,2,3,4,7,8-HxCDF	77		19 - 202
13C-1,2,3,6,7,8-HxCDF	79		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-150514/3-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150514

<i>Isotope Dilution</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,4,6,7,8-HpCDD	75		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	77		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	76		20 - 186
13C-OCDD	78		13 - 199

<i>Surrogate</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	83		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151375

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
2,3,7,8-TCDF - RA	ND		0.000010	0.0000020	ug/L		02/14/17 14:51	02/17/17 23:24	1

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C-2,3,7,8-TCDF - RA	61		24 - 169	02/14/17 14:51	02/17/17 23:24	1

<i>Surrogate</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
37Cl4-2,3,7,8-TCDD - RA	88		35 - 197	02/14/17 14:51	02/17/17 23:24	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389069/1-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389069

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Cadmium	ND		1.0	0.25	ug/L		02/18/17 09:59	02/19/17 23:50	1
Copper	ND		2.0	0.50	ug/L		02/18/17 09:59	02/19/17 23:50	1
Lead	ND		1.0	0.50	ug/L		02/18/17 09:59	02/19/17 23:50	1
Selenium	ND		2.0	0.50	ug/L		02/18/17 09:59	02/19/17 23:50	1

Lab Sample ID: LCS 440-389069/2-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389069

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS LCS</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
		<i>Result</i>	<i>Qualifier</i>				
Cadmium	80.0	78.3		ug/L		98	85 - 115
Copper	80.0	80.3		ug/L		100	85 - 115
Lead	80.0	77.5		ug/L		97	85 - 115
Selenium	80.0	77.7		ug/L		97	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175978-A-3-D MS
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	79.0		ug/L		99	70 - 130
Copper	2.9		80.0	83.0		ug/L		100	70 - 130
Lead	ND		80.0	77.7		ug/L		97	70 - 130
Selenium	ND		80.0	76.9		ug/L		96	70 - 130

Lab Sample ID: 440-175978-A-3-E MSD
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	ND		80.0	85.3		ug/L		107	70 - 130	8	20
Copper	2.9		80.0	90.0		ug/L		109	70 - 130	8	20
Lead	ND		80.0	82.7		ug/L		103	70 - 130	6	20
Selenium	ND		80.0	83.4		ug/L		104	70 - 130	8	20

Lab Sample ID: MB 440-388058/1-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388279

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/14/17 18:13	02/15/17 12:21	1
Copper	ND		2.0	0.50	ug/L		02/14/17 18:13	02/15/17 12:21	1
Lead	ND		1.0	0.50	ug/L		02/14/17 18:13	02/15/17 12:21	1
Selenium	ND		2.0	0.50	ug/L		02/14/17 18:13	02/15/17 12:21	1

Lab Sample ID: LCS 440-388058/2-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	74.6		ug/L		93	85 - 115
Copper	80.0	75.1		ug/L		94	85 - 115
Lead	80.0	73.1		ug/L		91	85 - 115
Selenium	80.0	72.8		ug/L		91	85 - 115

Lab Sample ID: LCSD 440-388058/23-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	80.0	73.5		ug/L		92	85 - 115	2	20
Copper	80.0	74.2		ug/L		93	85 - 115	1	20
Lead	80.0	73.8		ug/L		92	85 - 115	1	20
Selenium	80.0	72.7		ug/L		91	85 - 115	0	20

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175637-C-2-C MS
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Cadmium	ND	QP	80.0	73.8		ug/L		92	70 - 130	
Copper	1.8	J,DX QP	80.0	74.3		ug/L		91	70 - 130	
Lead	ND	QP	80.0	72.4		ug/L		91	70 - 130	
Selenium	ND	QP	80.0	72.9		ug/L		91	70 - 130	

Lab Sample ID: 440-175637-C-2-D MSD
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	70.0		ug/L		87	70 - 130	5	20
Copper	1.8	J,DX QP	80.0	71.4		ug/L		87	70 - 130	4	20
Lead	ND	QP	80.0	67.3		ug/L		84	70 - 130	7	20
Selenium	ND	QP	80.0	70.2		ug/L		88	70 - 130	4	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388098/1-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388098

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 16:36	1

Lab Sample ID: LCS 440-388098/2-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	7.73		ug/L		97	85 - 115

Lab Sample ID: 440-176655-A-1-B MS
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Mercury	ND		8.00	7.79		ug/L		97	70 - 130	

Lab Sample ID: 440-176655-A-1-C MSD
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Mercury	ND		8.00	7.73		ug/L		97	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-388058/1-C
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388307

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/14/17 21:33	02/16/17 15:35	1

Lab Sample ID: LCS 440-388058/2-C
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388307

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.31		ug/L		104	85 - 115

Lab Sample ID: 440-175985-1 MS
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Outfall001_20170208_Comp_F
Prep Type: Dissolved
Prep Batch: 388307

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.19		ug/L		102	70 - 130

Lab Sample ID: 440-175985-1 MSD
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Outfall001_20170208_Comp_F
Prep Type: Dissolved
Prep Batch: 388307

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.14		ug/L		102	70 - 130	1	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-387491/5
Matrix: Water
Analysis Batch: 387491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/09/17 16:16	1

Lab Sample ID: 440-176071-A-2 DU
Matrix: Water
Analysis Batch: 387491

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	1.8		1.69		NTU		4	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-388181/1
Matrix: Water
Analysis Batch: 388181

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/14/17 10:01	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-388181/2
Matrix: Water
Analysis Batch: 388181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	946		mg/L		95	90 - 110

Lab Sample ID: 440-176090-B-1 DU
Matrix: Water
Analysis Batch: 388181

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	5100		4910		mg/L		4	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-388484/1
Matrix: Water
Analysis Batch: 388484

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/15/17 14:18	1

Lab Sample ID: LCS 440-388484/2
Matrix: Water
Analysis Batch: 388484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1030		mg/L		103	85 - 115

Lab Sample ID: 440-176741-B-3 DU
Matrix: Water
Analysis Batch: 388484

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	170		160		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387906/1-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387906

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:50	1

Lab Sample ID: LCS 440-387906/2-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.9		ug/L		97	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCSD 440-387906/3-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	96.8		ug/L		97	90 - 110	0	10

Lab Sample ID: 440-176655-K-1-B MSD
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.7		ug/L		100	70 - 115	2	15

Lab Sample ID: 440-176655-K-1-C MS
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	97.9		ug/L		98	70 - 115

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-388781/10
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/16/17 16:30	1

Lab Sample ID: LCS 440-388781/11
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	4.820		mg/L		96	90 - 110

Lab Sample ID: MRL 440-388781/9
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2280		mg/L		114	10 - 200

Lab Sample ID: 440-176929-C-3 MS
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.070		mg/L		101	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-176929-C-3 MSD
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	4.720		mg/L		94	90 - 110	7	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-387570/3
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/10/17 01:11	1

Lab Sample ID: LCS 440-387570/4
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.243		mg/L		97	90 - 110

Lab Sample ID: 440-175968-A-2 MS
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.18		0.250	0.329		mg/L		58	50 - 125

Lab Sample ID: 440-175968-A-2 MSD
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.18		0.250	0.345		mg/L		65	50 - 125	5	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-387377/1
Matrix: Water
Analysis Batch: 387377

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/09/17 08:12	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: SM5210B - BOD, 5 Day (Continued)

Lab Sample ID: LCS 440-387377/4
 Matrix: Water
 Analysis Batch: 387377

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	179		mg/L		90	85 - 115

Lab Sample ID: LCSD 440-387377/5
 Matrix: Water
 Analysis Batch: 387377

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	176		mg/L		88	85 - 115	0	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

GC/MS Semi VOA

Prep Batch: 387389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	625	
MB 440-387389/1-A	Method Blank	Total/NA	Water	625	
LCS 440-387389/2-A	Lab Control Sample	Total/NA	Water	625	
LCS 440-387389/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 388032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	625	387389
MB 440-387389/1-A	Method Blank	Total/NA	Water	625	387389
LCS 440-387389/2-A	Lab Control Sample	Total/NA	Water	625	387389
LCS 440-387389/3-A	Lab Control Sample Dup	Total/NA	Water	625	387389

GC Semi VOA

Prep Batch: 387433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	608	
MB 440-387433/1-A	Method Blank	Total/NA	Water	608	
LCS 440-387433/2-A	Lab Control Sample	Total/NA	Water	608	
440-175633-H-1-B MS	Matrix Spike	Total/NA	Water	608	
440-175633-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	

Analysis Batch: 387787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	608 Pesticides	387433
MB 440-387433/1-A	Method Blank	Total/NA	Water	608 Pesticides	387433
LCS 440-387433/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	387433
440-175633-H-1-B MS	Matrix Spike	Total/NA	Water	608 Pesticides	387433
440-175633-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	387433

HPLC/IC

Analysis Batch: 387177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	300.0	
MB 440-387177/4	Method Blank	Total/NA	Water	300.0	
LCS 440-387177/2	Lab Control Sample	Total/NA	Water	300.0	
440-175985-2 MS	Outfall001_20170208_Comp	Total/NA	Water	300.0	
440-175985-2 MSD	Outfall001_20170208_Comp	Total/NA	Water	300.0	

Analysis Batch: 387178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	300.0	
MB 440-387178/4	Method Blank	Total/NA	Water	300.0	
LCS 440-387178/2	Lab Control Sample	Total/NA	Water	300.0	
440-175985-2 MS	Outfall001_20170208_Comp	Total/NA	Water	300.0	
440-175985-2 MSD	Outfall001_20170208_Comp	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

HPLC/IC (Continued)

Analysis Batch: 387392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	314.0	
MB 440-387392/3	Method Blank	Total/NA	Water	314.0	
LCS 440-387392/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-387392/5	Lab Control Sample	Total/NA	Water	314.0	
440-176078-B-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-176078-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 389519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 150514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	1613B	
440-175985-2 - RA	Outfall001_20170208_Comp	Total/NA	Water	1613B	
MB 320-150514/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-150514/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-150514/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-150514/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 151022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	1613B	150514
MB 320-150514/1-A	Method Blank	Total/NA	Water	1613B	150514
LCS 320-150514/2-A	Lab Control Sample	Total/NA	Water	1613B	150514
LCSD 320-150514/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	150514

Analysis Batch: 151375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2 - RA	Outfall001_20170208_Comp	Total/NA	Water	1613B	150514
MB 320-150514/1-A - RA	Method Blank	Total/NA	Water	1613B	150514

Metals

Filtration Batch: 388058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388058/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-388058/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-388058/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-175985-1 MS	Outfall001_20170208_Comp_F	Dissolved	Water	FILTRATION	
440-175985-1 MSD	Outfall001_20170208_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Metals (Continued)

Prep Batch: 388098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	245.1	
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 388279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	200.2	388058
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.2	388058
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.2	388058
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.2	388058
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.2	388058
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	388058

Analysis Batch: 388283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	245.1	388098
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	388098
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	388098
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	388098
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	388098

Prep Batch: 388307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	245.1	388058
MB 440-388058/1-C	Method Blank	Dissolved	Water	245.1	388058
LCS 440-388058/2-C	Lab Control Sample	Dissolved	Water	245.1	388058
440-175985-1 MS	Outfall001_20170208_Comp_F	Dissolved	Water	245.1	388058
440-175985-1 MSD	Outfall001_20170208_Comp_F	Dissolved	Water	245.1	388058

Analysis Batch: 388477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	200.8	388279
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.8	388279
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.8	388279
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.8	388279
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.8	388279
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	388279

Analysis Batch: 388664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	200.8	388279
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.8	388279
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.8	388279
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.8	388279
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.8	388279
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	388279

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Metals (Continued)

Analysis Batch: 388790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	245.1	388307
MB 440-388058/1-C	Method Blank	Dissolved	Water	245.1	388307
LCS 440-388058/2-C	Lab Control Sample	Dissolved	Water	245.1	388307
440-175985-1 MS	Outfall001_20170208_Comp_F	Dissolved	Water	245.1	388307
440-175985-1 MSD	Outfall001_20170208_Comp_F	Dissolved	Water	245.1	388307

Prep Batch: 389069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total Recoverable	Water	200.2	
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175978-A-3-D MS	Matrix Spike	Total Recoverable	Water	200.2	
440-175978-A-3-E MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 389235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total Recoverable	Water	200.8	389069
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.8	389069
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389069
440-175978-A-3-D MS	Matrix Spike	Total Recoverable	Water	200.8	389069
440-175978-A-3-E MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	389069

General Chemistry

Analysis Batch: 387377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	SM5210B	
USB 440-387377/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-387377/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-387377/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 387491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	180.1	
MB 440-387491/5	Method Blank	Total/NA	Water	180.1	
440-176071-A-2 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 387570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	SM 5540C	
MB 440-387570/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-387570/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-175968-A-2 MS	Matrix Spike	Total/NA	Water	SM 5540C	
440-175968-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Prep Batch: 387906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	Distill/CN	
MB 440-387906/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

General Chemistry (Continued)

Prep Batch: 387906 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS D 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	Distill/CN	

Analysis Batch: 388090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	SM 4500 CN E	387906
MB 440-387906/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387906
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387906
LCS D 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	387906

Analysis Batch: 388181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	SM 2540C	
MB 440-388181/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-388181/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-176090-B-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 388484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	SM 2540D	
MB 440-388484/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-388484/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-176741-B-3 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 388781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-388781/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-388781/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-388781/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-176929-C-3 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-176929-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 28, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall001_20170208__Comp (440-175985-2)
DATE RECEIVED: 10 Feb - 17
ABC LAB NO.: TAM0217.149

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 9.38 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 24 Feb-17 11:13 (p 1 of 1)
 Test Code: TAM0217.149sel | 11-3074-8507

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 16-3353-8462	Test Type: Cell Growth	Analyst:
Start Date: 10 Feb-17 12:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Feb-17 10:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 07-6044-3599	Code: TAM0217.149s	Client: Test America Irvine
Sample Date: 08 Feb-17 08:20	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 10 Feb-17 11:24	Source: Bioassay Report	
Sample Age: 52h (1.1 °C)	Station: Outfall001_20170208_Comp (440-175985-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
09-1819-8637	Cell Density	TST-Welch's t Test	3.0E-06	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
09-1819-8637	Cell Density	Control CV	0.03689	<<	0.2	Yes	Passes Criteria
09-1819-8637	Cell Density	Control Resp	1.38E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.378E+6	1.335E+6	1.420E+6	1.307E+6	1.450E+6	1.797E+4	5.082E+4	3.69%	0.00%
100		8	1.248E+6	1.194E+6	1.303E+6	1.178E+6	1.346E+6	2.304E+4	6.516E+4	5.22%	9.38%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.365E+6	1.307E+6	1.437E+6	1.388E+6	1.380E+6	1.314E+6	1.450E+6	1.380E+6
100		1.346E+6	1.180E+6	1.306E+6	1.178E+6	1.249E+6	1.299E+6	1.249E+6	1.180E+6

CETIS Analytical Report

Report Date: 24 Feb-17 11:13 (p 1 of 2)
 Test Code: TAM0217.149sel | 11-3074-8507

Selenastrum Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 09-1819-8637	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 24 Feb-17 11:13	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 16-3353-8462	Test Type: Cell Growth	Analyst:
Start Date: 10 Feb-17 12:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Feb-17 10:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 07-6044-3599	Code: TAM0217.149s	Client: Test America Irvine
Sample Date: 08 Feb-17 08:20	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 10 Feb-17 11:24	Source: Bioassay Report	
Sample Age: 52h (1.1 °C)	Station: Outfall001_20170208_Comp (440-175985-	

Data Transform	Alt Hyp	TST b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	8.062	0.6974	11	CDF	3.0E-06	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.03689	<<	0.2	Yes	Passes Criteria
Control Resp	1.38E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	6.682E+10	6.682E+10	1	19.57	5.8E-04	Significant Effect
Error	4.78E+10	3.414E+09	14			
Total	1.146E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.8166	8.862	0.3815	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.8365	8.862	0.3759	Equal Variances
Variances	Variance Ratio F Test	1.644	8.885	0.5277	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6988	3.878	0.0680	Normal Distribution
Distribution	D'Agostino Skewness Test	0.1919	2.576	0.8479	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1827	0.2471	0.1660	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9021	0.8408	0.0869	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.378E+6	1.335E+6	1.420E+6	1.380E+6	1.307E+6	1.450E+6	1.797E+4	3.69%	0.00%
100		8	1.248E+6	1.194E+6	1.303E+6	1.249E+6	1.178E+6	1.346E+6	2.304E+4	5.22%	9.38%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.365E+6	1.307E+6	1.437E+6	1.388E+6	1.380E+6	1.314E+6	1.450E+6	1.380E+6
100		1.346E+6	1.180E+6	1.306E+6	1.178E+6	1.249E+6	1.299E+6	1.249E+6	1.180E+6

CETIS Measurement Report

Report Date: 24 Feb-17 11:13 (p 1 of 2)
 Test Code: TAM0217.149sel | 11-3074-8507

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 16-3353-8462	Test Type: Cell Growth	Analyst:
Start Date: 10 Feb-17 12:50	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Feb-17 10:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 07-6044-3599	Code: TAM0217.149s	Client: Test America Irvine
Sample Date: 08 Feb-17 08:20	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 10 Feb-17 11:24	Source: Bioassay Report	
Sample Age: 52h (1.1 °C)	Station: Outfall001_20170208_Comp (440-175985-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	60			60	60	0	0	0.0%	0
Overall		2	64	13.18	114.8	60	68	4	5.657	8.84%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	461.6	446.4	476.8	445	475	5.464	12.22	2.65%	0
100		5	269	257.6	280.4	261	284	4.123	9.22	3.43%	0
Overall		10	365.3	292.3	438.3	261	475	32.26	102	27.93%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
100		1	90			90	90	0	0	0.0%	0
Overall		2	94.5	37.32	151.7	90	99	4.5	6.364	6.73%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.72	7.466	7.974	7.4	7.9	0.09165	0.2049	2.66%	0
100		5	7.88	7.611	8.149	7.7	8.2	0.09695	0.2168	2.75%	0
Overall		10	7.8	7.645	7.955	7.4	8.2	0.06831	0.216	2.77%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.04	23.97	24.11	24	24.1	0.02445	0.05468	0.23%	0
100		5	24.04	23.97	24.11	24	24.1	0.02445	0.05468	0.23%	0
Overall		10	24.04	24	24.08	24	24.1	0.01633	0.05164	0.21%	0 (0%)

CETIS Measurement Report

Report Date: 24 Feb-17 11:13 (p 2 of 2)

Test Code: TAM0217.149sel | 11-3074-8507

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	68
100		60

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	445	456	460	472	475
100		261	262	268	270	284

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	99
100		90

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.4	7.9	7.9	7.7	7.7
100		7.7	7.7	8	7.8	8.2

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24	24	24	24.1	24.1
100		24	24	24	24.1	24.1



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

TestAmerica Irvine
17461 Dertan Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

TAM:149

Chain of Custody Record



TestAmerica

Client Information (Sub Contract Lab)

Client Contact: Shippling/Receiving
Company: Aquatic Bioassay
Address: 29 North Olive Street,
City: Ventura
State, Zip: CA, 93001
Phone:
Email:
Project Name: Boeing NPDES SSFL outfalls
Site:

Sampler: Patel, Urvasi
Phone:
E-Mail: urvasi.patel@testamericainc.com
Accreditations Required (See note):

Lab PM: Patel, Urvasi
Carrier Tracking No(s):
State of Origin: California

COC No: 440-107339-1
Page: Page 1 of 1
Job #: 440-175985-1

Due Date Requested: 2/21/2017
TAT Requested (days):

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amnolite
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4.5
Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=soil, O=water/Oil, Br=Tissue, Ash)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of containers	Special Instructions/Note:
Outfall001_20170208_Comp (440-175985-2)	2/8/17	08:20 Pacific		Water		X		6	Temp. deg. C = 11.0C Chlorine (mg/L) = 0 NH3 (mg/L) = 0

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/mark being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____
Relinquished by: *VB* Date/Time: *2/9/17 17:00* Company: *TK*
Relinquished by: _____ Date/Time: _____ Company: _____
Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No
Custody Seal No.: _____
Received by: *FedEx* Date/Time: *2/9/17 17:00* Company: _____
Received by: *EMK* Date/Time: *2/09/17 11:04* Company: _____
Cooler Temperature(s) °C and Other Remarks:

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017


STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:			
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab			
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)	
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect	
Error	3.997E+10	2.220E+09	18				
Total	1.834E+12		23				

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

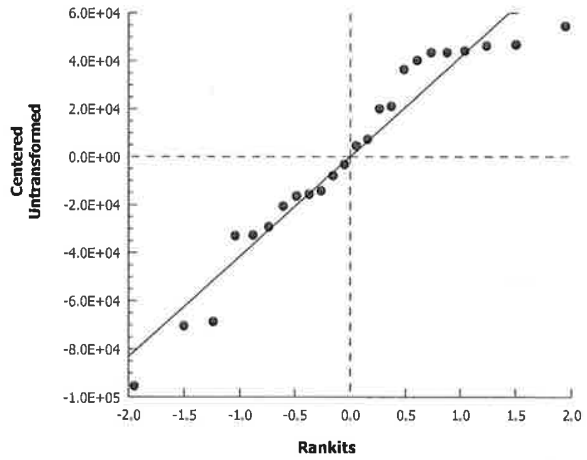
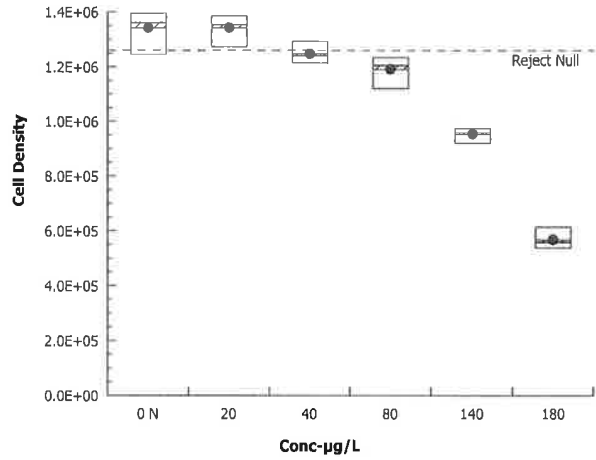
Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes	

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 14-2916-7122	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Official Results: Yes
Analyzed: 19 Jan-17 16:21	Analysis: Linear Interpolation (ICPIN)		
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:	
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab	
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	34.35	13.62	61.11
IC10	69.42	18.65	99.03
IC15	93.35	62.81	109.5
IC20	110.4	88.48	124.6
IC25	127.5	108.9	141.2
IC40	155.7	149.9	160.7
IC50	169.5	164.4	175.1

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.0%
20		4	1.341E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.82%	6.92%
80		4	1.192E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 001 Camp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED	
Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2)		Total Dissolved Metals: Mercury (E245.1)	
Sampler: Dan Smith		Sample Matrix: WM		Container Type: 1L Poly		Total Dissolved Metals: Mercury (E245.1)	
Sample I.D.: Outfall001_20170208_Comp_F		Sampling Date/Time: 2/8/2017 1030		# of Cont.: 1		Chronic Toxicity - Selenium (EPA-821-R-02-013)	
Sample Description: Outfall 001		Sample Matrix: WM		Preservative: None		Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	
Sample I.D.: Outfall001_20170208_Comp		Sampling Date/Time: 2/8/2017 1030		# of Cont.: 1		Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Gross Alpha (E900.0), Gross Beta (E900.0),	
Sample Matrix: WM		Container Type: 500 mL Poly		Preservative: NaOH		Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.	
Sample Matrix: WM		Container Type: 2.5 Gal Cube		Preservative: None		Only test if first or second rain events of the year	
Sample Matrix: WM		Container Type: 1L Glass Amber		Preservative: None		Only test if first or second rain events of the year	
Sample Matrix: WM		Container Type: 1 Gal Cube		Preservative: None		Only test if first or second rain events of the year	



Handwritten initials: US, 2/8/17

Relinquished By: [Signature] Date/Time: 2/8/17 1030 Company: SHM	Received By: [Signature] Date/Time: 2-8-17 1030	Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X 48 Hour: ___ 5 Day: ___ Normal: ___
Relinquished By: [Signature] Date/Time: 2-8-17 1330 Company: A	Received By: [Signature] Date/Time: 2/8/17 1330	Sample Integrity: (Check) Intact: ___ On Ice: ___
Relinquished By: [Signature] Date/Time: 3/5/2017	Received By: [Signature] Date/Time: 1.4/11.7 1.3/1.0, 1.1/1.4 0.9/1.2 2.0/2.9 2.1/2.4 2.1/2.4 0.8/1.1, 1.1/1.4 0.8/1.1, 1.1/1.4	Store samples for 6 months. Data Requirements: (Check) No Level: ___ All Level: ___ X



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175985-1

Login Number: 175985

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175985-1

Login Number: 175985

List Number: 2

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 02/10/17 11:33 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-175985-2	Outfall001_20170208_Comp		75		70		86		75
440-175985-2 - RA	Outfall001_20170208_Comp				67				
MB 320-150514/1-A	Method Blank		66		65		75		67
MB 320-150514/1-A - RA	Method Blank				61				

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-175985-2	Outfall001_20170208_Comp		80		83		85		80
440-175985-2 - RA	Outfall001_20170208_Comp								
MB 320-150514/1-A	Method Blank		76		78		82		75
MB 320-150514/1-A - RA	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-175985-2	Outfall001_20170208_Comp		84		78		87	87	
440-175985-2 - RA	Outfall001_20170208_Comp								
MB 320-150514/1-A	Method Blank		76		66		78	73	
MB 320-150514/1-A - RA	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-175985-2	Outfall001_20170208_Comp		84		89		90
440-175985-2 - RA	Outfall001_20170208_Comp						
MB 320-150514/1-A	Method Blank		75		74		75
MB 320-150514/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-150514/2-A	Lab Control Sample	72	70	83	74	82	81	84	80
LCSD 320-150514/3-A	Lab Control Sample Dup	63	62	76	67	76	78	84	77

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-150514/2-A	Lab Control Sample	80	71	81	80	80	81	84
LCSD 320-150514/3-A	Lab Control Sample Dup	79	67	78	75	77	76	78

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175985-2

Client Project/Site: Routine Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 9:56:20 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 9:56:20 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175985-2	Outfall001_20170208_Comp	Water	02/08/17 08:20	02/08/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Job ID: 440-175985-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175985-2

Comments

No additional comments.

Receipt

The samples were received on 2/8/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.1° C, 1.2° C, 1.4° C, 1.6° C, 1.7° C, 2.4° C, 2.4° C and 2.9° C.

RAD

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-292776

The following sample was removed from the batch due to the absence of a strontium sulfate precipitate during the into-ingrowth process. Prior to this complication the sample was seeded with barium carrier when a barium pellet did not form. The sample was re-precipitated in prep batch: 160-293923.

Outfall001_20170208_Comp (440-175985-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.779	U	0.914	0.918	3.00	1.50	pCi/L	03/03/17 08:15	03/10/17 15:27	1
Gross Beta	2.25		0.780	0.811	4.00	1.08	pCi/L	03/03/17 08:15	03/10/17 15:27	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.41	U	8.92	8.93	20.0	15.5	pCi/L	02/13/17 14:36	02/14/17 04:27	1
Potassium-40	47.8	U	88.4	88.5		145	pCi/L	02/13/17 14:36	02/14/17 04:27	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0181	U	0.150	0.150	1.00	0.305	pCi/L	02/13/17 11:24	03/07/17 06:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.9		40 - 110					02/13/17 11:24	03/07/17 06:01	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.205	U	0.271	0.272	1.00	0.452	pCi/L	02/13/17 12:05	03/06/17 14:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.9		40 - 110					02/13/17 12:05	03/06/17 14:11	1
Y Carrier	89.0		40 - 110					02/13/17 12:05	03/06/17 14:11	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.277	U	0.254	0.255	3.00	0.409	pCi/L	02/22/17 11:07	03/02/17 15:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	52.2		40 - 110					02/22/17 11:07	03/02/17 15:51	1
Y Carrier	98.3		40 - 110					02/22/17 11:07	03/02/17 15:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-182	U	173	174	500	338	pCi/L	03/07/17 09:09	03/07/17 17:25	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.0948	U	0.1076	0.1078	1.00	0.134	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.9		30 - 110					02/21/17 13:19	02/24/17 17:20	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	295726	03/03/17 08:15	MRB	TAL SL
Total/NA	Analysis	900.0		1			297171	03/10/17 15:27	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	292056	02/13/17 14:36	R1S	TAL SL
Total/NA	Analysis	901.1		1			292247	02/14/17 04:27	CDR	TAL SL
Total/NA	Prep	PrecSep-21			1000.70 mL	1.0 g	292028	02/13/17 11:24	MBC	TAL SL
Total/NA	Analysis	903.0		1			296226	03/07/17 06:01	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.70 mL	1.0 g	292032	02/13/17 12:05	MBC	TAL SL
Total/NA	Analysis	904.0		1			296097	03/06/17 14:11	ALD	TAL SL
Total/NA	Prep	PrecSep-7			1000.30 mL	1.0 g	293923	02/22/17 11:07	BME	TAL SL
Total/NA	Analysis	905		1			295372	03/02/17 15:51	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	296336	03/07/17 09:09	JDL	TAL SL
Total/NA	Analysis	906.0		1			296562	03/07/17 17:25	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.00 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294627	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-295726/1-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295726

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.4199	U	0.555	0.558	3.00	1.19	pCi/L	03/03/17 08:15	03/10/17 11:51	1
Gross Beta	-0.3095	U	0.536	0.537	4.00	1.00	pCi/L	03/03/17 08:15	03/10/17 11:51	1

Lab Sample ID: LCS 160-295726/2-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	47.25		6.90	3.00	1.82	pCi/L	95	73 - 133

Lab Sample ID: LCSB 160-295726/3-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.0	90.52		9.60	4.00	1.13	pCi/L	99	75 - 125

Lab Sample ID: 440-175840-G-1-N MS
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	0.992	U	49.9	40.06		6.01	3.00	1.64	pCi/L	80	60 - 140

Lab Sample ID: 440-175840-G-1-O MSD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	0.992	U	49.9	30.30		4.78	3.00	1.56	pCi/L	61	60 - 140	0.90	1

Lab Sample ID: 440-175840-G-1-P MSBT
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	2.81		91.0	92.89		9.82	4.00	0.991	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-175840-G-1-Q MSBTD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	2.81		91.0	93.16		9.85	4.00	0.971	pCi/L	99	60 - 140	0.01	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-292056/1-A
Matrix: Water
Analysis Batch: 292247

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292056

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.451	U	6.76	6.76	20.0	11.8	pCi/L	02/13/17 14:36	02/14/17 14:20	1
Potassium-40	-78.47	U	152	152		201	pCi/L	02/13/17 14:36	02/14/17 14:20	1

Lab Sample ID: LCS 160-292056/2-A
Matrix: Water
Analysis Batch: 292012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292056

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	129300		14900		389	pCi/L	95	90 - 111
Cesium-137	47000	47050		4720	20.0	118	pCi/L	100	90 - 111
Cobalt-60	39800	39010		3860		72.2	pCi/L	98	89 - 110

Lab Sample ID: 440-175978-R-3-D DU
Matrix: Water
Analysis Batch: 292247

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292056

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Cesium-137	0.465	U	-0.2012	U	11.4	20.0	19.8	pCi/L			0.04	1
Potassium-40	4.70	U	-24.17	U	156		201	pCi/L			0.11	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292028/1-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292028

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.09280	U	0.162	0.162	1.00	0.285	pCi/L	02/13/17 11:24	03/07/17 06:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					02/13/17 11:24	03/07/17 06:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292028/2-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	10.97		1.36	1.00	0.265	pCi/L	97	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	90.9		40 - 110							

Lab Sample ID: 440-175840-G-1-A MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.110	U	11.3	10.98		1.43	1.00	0.316	pCi/L	97	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	70.8		40 - 110								

Lab Sample ID: 440-175840-G-1-B MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.110	U	11.3	11.35		1.46	1.00	0.326	pCi/L	101	75 - 138	0.13	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	72.0		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292032/1-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292032

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-228	0.1981	U	0.244	0.245	1.00	0.404	pCi/L	02/13/17 12:05	03/06/17 14:13	1	
Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac					
Ba Carrier	87.3		40 - 110	02/13/17 12:05	03/06/17 14:13	1					
Y Carrier	87.1		40 - 110	02/13/17 12:05	03/06/17 14:13	1					

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-292032/2-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	14.29		1.52	1.00	0.344	pCi/L	104	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	90.9		40 - 110						
Y Carrier	96.1		40 - 110						

Lab Sample ID: 440-175840-G-1-C MS
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.00442	U	13.8	15.32		1.69	1.00	0.503	pCi/L	111	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	70.8		40 - 110								
Y Carrier	92.3		40 - 110								

Lab Sample ID: 440-175840-G-1-D MSD
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.00442	U	13.7	15.21		1.67	1.00	0.504	pCi/L	111	45 - 150	0.03	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	72.0		40 - 110										
Y Carrier	92.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-293923/1-A
Matrix: Water
Analysis Batch: 295361

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293923

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac		
Strontium-90	0.1193	U	0.182	0.183	3.00	0.306	pCi/L	02/22/17 11:07	03/02/17 15:45	1		
MB MB												
Carrier	%Yield	Qualifier	Limits							Prepared	Analyzed	Dil Fac
Sr Carrier	86.8		40 - 110							02/22/17 11:07	03/02/17 15:45	1
Y Carrier	95.3		40 - 110							02/22/17 11:07	03/02/17 15:45	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-293923/2-A
Matrix: Water
Analysis Batch: 295361

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293923

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.390		0.871	3.00	0.284	pCi/L	99	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.0		40 - 110						
Y Carrier	95.7		40 - 110						

Lab Sample ID: 440-175840-G-1-I MS
Matrix: Water
Analysis Batch: 295372

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293923

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.236	U	8.50	8.480		1.00	3.00	0.471	pCi/L	100	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	50.0		40 - 110								
Y Carrier	96.1		40 - 110								

Lab Sample ID: 440-175840-G-1-J MSD
Matrix: Water
Analysis Batch: 295372

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293923

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.236	U	8.49	8.122		0.958	3.00	0.464	pCi/L	96	19 - 150	0.18	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	52.8		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-296336/1-A
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296336

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-81.08	U	184	184	500	339	pCi/L	03/07/17 09:09	03/07/17 16:17	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-296336/2-A
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296336

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2721		431	500	340	pCi/L	93	74 - 114

Lab Sample ID: 160-21120-F-5-B MSD
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296336

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-173	U	2930	2928		452	500	345	pCi/L	100	67 - 130	0.38	1

Lab Sample ID: 160-21120-G-5-A MS
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296336

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-173	U	2940	2599		420	500	340	pCi/L	88	67 - 130

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.4		30 - 110					02/21/17 13:19	02/24/17 17:20	1

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	85.9		30 - 110						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample		Spike Added	MS		Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
	Result	Qual		Result	Qual						Limit	Limit
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146	
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	88.1		30 - 110									

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample		Spike Added	MSD		Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
	Result	Qual		Result	Qual						Limit	Limit	Limit	
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146	0.01	1	
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1	
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	87.1		30 - 110											

Lab Sample ID: 440-175840-G-1-G MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample		Spike Added	MS		Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
	Result	Qual		Result	Qual						Limit	Limit
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146	
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	96.2		30 - 110									

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample		Spike Added	MSD		Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
	Result	Qual		Result	Qual						Limit	Limit	Limit	
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1	
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1	
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	82.1		30 - 110											

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	66.9		30 - 110								

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual								
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	85.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Rad

Prep Batch: 292028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	PrecSep-21	
MB 160-292028/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292028/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-175840-G-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-175840-G-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 292032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	PrecSep_0	
MB 160-292032/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292032/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-175840-G-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-175840-G-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 292056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-292056/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-292056/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-175978-R-3-D DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 293923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	PrecSep-7	
MB 160-293923/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-293923/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-175840-G-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-175840-G-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 295726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	Evaporation	
MB 160-295726/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-295726/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-295726/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-175840-G-1-N MS	Matrix Spike	Total/NA	Water	Evaporation	
440-175840-G-1-O MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-175840-G-1-P MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-175840-G-1-Q MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Prep Batch: 296336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-296336/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-296336/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-21120-F-5-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	
160-21120-G-5-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 001 Comp		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245), (SVOCs E625) 2,4,6-TCP, 2,4-Dinitrochlorobenzene, Bis(2-ethylhexyl)phthalate, NDMA, PCP alpha-BHC (E609) Ammonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Cl ⁻ , SO ₄ ²⁻ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Surfactants (MBAS) (SM5540C/E425.1) (E405.1) (SM5210B, BODCalc) BOD ₅ (20 degrees C) TCDD (and all congeners) (E1813B) Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments						
Test America Contact: Urvaashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606; 520.904.6944 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments						
Test America's services under the CoC shall be performed in accordance with the T&Cs with Blanket Service Agreement # 2015-15. Test America by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.		Field Manager: Mark Dominick 818.350.7312; 818.599.0702 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments						
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	M/MSD	TCDD (and all congeners) (E1813B)	BOD ₅ (20 degrees C) (E405.1) (SM5210B, BODCalc)	Surfactants (MBAS) (SM5540C/E425.1)	Cl ⁻ , SO ₄ ²⁻ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E609)	2,4,6-TCP, 2,4-Dinitrochlorobenzene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245), (SVOCs E625)	Comments	
	Outfall001_20170208_Comp	2/8/2017 10:50	WM	500 mL Poly	1	HNO ₃	90	No	X											
	Outfall001_20170208_Comp_Extra	2/8/2017 10:50	WM	1 L Glass Amber	2	None	110	No												
			WM	1 L Poly	1	None	115	No												
			WM	500 mL Poly	2	None	120	No												
			WM	500 mL Poly	2	None	130	No												
			WM	500 mL Poly	1	None	150	No												
			WM	500 mL Poly	1	H ₂ SO ₄	160	No												
			WM	1 L Glass Amber	2	None	170	No												
			WM	1 L Glass Amber	2	None	180	No												
			WM	1 L Poly	1	None	185	No												
			WM	benzocaine vials	1	HNO ₃	315	No												
			WM	1 L Glass Amber	2	None	110	No												
			WM	500 mL Poly	2	None	120	No												
			WM	500 mL Poly	2	None	130	No												
			WM	1 L Glass Amber	2	None	170	No												
			WM	1 L Glass Amber	2	None	180	No												

Relinquished By: <i>[Signature]</i>	Date/Time: 2/8/17 10:30 SKA	Company: SKA	Reported By: <i>[Signature]</i>	Date/Time: 2/8/17 10:30	Turn-around time: (Check) 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>
Relinquished By: <i>[Signature]</i>	Date/Time: 2/8/17 13:30	Company: <i>[Signature]</i>	Received By: <i>[Signature]</i>	Date/Time: 2/8/17 13:30	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/> Store samples for 6 months. Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>
Relinquished By: <i>[Signature]</i>	Date/Time: 2/8/17 13:30	Company: <i>[Signature]</i>	Received By: <i>[Signature]</i>	Date/Time: 2/8/17 13:30	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175985-2

Login Number: 175985

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175985-2

Login Number: 175985

List Number: 3

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/10/17 01:44 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-175840-G-1-A MS	Matrix Spike	70.8
440-175840-G-1-B MSD	Matrix Spike Duplicate	72.0
440-175985-2	Outfall001_20170208_Comp	77.9
LCS 160-292028/2-A	Lab Control Sample	90.9
MB 160-292028/1-A	Method Blank	87.3

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-175840-G-1-C MS	Matrix Spike	70.8	92.3
440-175840-G-1-D MSD	Matrix Spike Duplicate	72.0	92.0
440-175985-2	Outfall001_20170208_Comp	77.9	89.0
LCS 160-292032/2-A	Lab Control Sample	90.9	96.1
MB 160-292032/1-A	Method Blank	87.3	87.1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-175840-G-1-I MS	Matrix Spike	50.0	96.1
440-175840-G-1-J MSD	Matrix Spike Duplicate	52.8	97.2
440-175985-2	Outfall001_20170208_Comp	52.2	98.3
LCS 160-293923/2-A	Lab Control Sample	87.0	95.7
MB 160-293923/1-A	Method Blank	86.8	95.3

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-E MS	Matrix Spike	88.1
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1
440-175840-G-1-G MS	Matrix Spike	96.2

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-175985-2	Outfall001_20170208_Comp	91.9
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175985-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175985-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170208_ Comp	440-175985-2	N/A	Water	2/8/17 8:20 AM	E200.8
Outfall001_20170208_ Comp_F	440-175985-1	N/A	Water	2/8/17 8:20 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175985-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHODS 200.8— METALS

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 5, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals, were met with the following exception. Sample Outfall001_20170208_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 5 days after receipt. The dissolved metal result from this sample was qualified as estimated (J).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

LCS/LCSD recoveries and RPDs were within the method control limits of 85-115% and $\leq 20\%$, respectively.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample in this SDG.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.



IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MECX^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MECX^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401759854

Analysis Method E200.8

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	11	20	2.5	ug/L	J,DX	J	DNQ

Sample Name Outfall001_20170208_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	3.5	20	2.5	ug/L	J,DXQP	J	DNQ,H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175985-4

Client Project/Site: Routine Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 3:57:14 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 3:57:14 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175985-1	Outfall001_20170208_Comp_F	Water	02/08/17 08:20	02/08/17 13:30
440-175985-2	Outfall001_20170208_Comp	Water	02/08/17 08:20	02/08/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Job ID: 440-175985-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175985-4**

Comments

200.7 metals analyzed with 200.8 method with 200.7 RLs.

Receipt

The samples were received on 2/8/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.1° C, 1.2° C, 1.4° C, 1.6° C, 1.7° C, 2.4° C, 2.4° C and 2.9° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Client Sample ID: Outfall001_20170208_Comp_F

Lab Sample ID: 440-175985-1

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	3.5	J,DX QP	20	2.5	ug/L		02/14/17 18:13	02/15/17 12:43	1

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	11	J,DX	20	2.5	ug/L		02/18/17 09:59	02/20/17 01:05	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Client Sample ID: Outfall001_20170208_Comp_F

Lab Sample ID: 440-175985-1

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388279	02/14/17 18:13	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388477	02/15/17 12:43	RC	TAL IRV

Client Sample ID: Outfall001_20170208_Comp

Lab Sample ID: 440-175985-2

Date Collected: 02/08/17 08:20

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	389069	02/18/17 09:59	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1			389235	02/20/17 01:05	EN	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389069/1-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/18/17 09:59	02/19/17 23:50	1

Lab Sample ID: LCS 440-389069/2-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	79.7		ug/L		100	85 - 115

Lab Sample ID: 440-175978-A-3-D MS
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	7.6	J,DX	80.0	86.0		ug/L		98	70 - 130

Lab Sample ID: 440-175978-A-3-E MSD
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	7.6	J,DX	80.0	91.9		ug/L		105	70 - 130	7	20

Lab Sample ID: MB 440-388058/1-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388279

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/14/17 18:13	02/15/17 12:21	1

Lab Sample ID: LCS 440-388058/2-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	74.2		ug/L		93	85 - 115

Lab Sample ID: LCSD 440-388058/23-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	80.0	74.7		ug/L		93	85 - 115	1	20

Lab Sample ID: 440-175637-C-2-C MS
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	3.4	J,DX QP	80.0	75.3		ug/L		90	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Lab Sample ID: 440-175637-C-2-D MSD
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	3.4	J,DX QP	80.0	72.5		ug/L		86	70 - 130	4	20

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Metals

Filtration Batch: 388058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388058/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 388279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	200.2	388058
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.2	388058
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.2	388058
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.2	388058
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.2	388058
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	388058

Analysis Batch: 388477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-1	Outfall001_20170208_Comp_F	Dissolved	Water	200.8	388279
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.8	388279
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.8	388279
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.8	388279
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.8	388279
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	388279

Prep Batch: 389069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total Recoverable	Water	200.2	
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175978-A-3-D MS	Matrix Spike	Total Recoverable	Water	200.2	
440-175978-A-3-E MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 389235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175985-2	Outfall001_20170208_Comp	Total Recoverable	Water	200.8	389069
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.8	389069
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389069
440-175978-A-3-D MS	Matrix Spike	Total Recoverable	Water	200.8	389069
440-175978-A-3-E MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	389069

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-175985-4

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 001 Camp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Comments	
Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		<small>TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</small>		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2)		Total Dissolved Metals: Mercury (E245.1)		Filler and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.	
Sampler: Dan Smith		Sample Matrix: WM Sampling Date/Time: 2/8/2017 / 0830		Container Type: 1L Poly # of Cont.: 1 Preservative: None Bottle #: 200 MS/MSD: No		Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)		Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.	
Sample Description: Outfall001_20170208_Comp_F		Sample Matrix: WM Sampling Date/Time: 2/8/2017 / 0830		Container Type: borosilicate vials # of Cont.: 1 Preservative: None Bottle #: 320 MS/MSD: No		Chronic Toxicity - Selenium (EPA-821-R-02-013)		Only test if first or second rain events of the year	
Sample Description: Outfall001_20170208_Comp		Sample Matrix: WM Sampling Date/Time: 2/8/2017 / 0830		Container Type: 500 mL Poly # of Cont.: 1 Preservative: NaOH Bottle #: 220 MS/MSD: No		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		Only test if first or second rain events of the year	
Sample Description: Outfall001_20170208_Comp		Sample Matrix: WM Sampling Date/Time: 2/8/2017 / 0830		Container Type: 2.5 Gal Cube # of Cont.: 1 Preservative: None Bottle #: 225 MS/MSD: No		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		Only test if first or second rain events of the year	
Sample Description: Outfall001_20170208_Comp		Sample Matrix: WM Sampling Date/Time: 2/8/2017 / 0830		Container Type: 1L Glass Amber # of Cont.: 1 Preservative: None Bottle #: 230 MS/MSD: No		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		Only test if first or second rain events of the year	
Sample Description: Outfall001_20170208_Comp		Sample Matrix: WM Sampling Date/Time: 2/8/2017 / 0830		Container Type: 1 Gal Cube # of Cont.: 6 Preservative: None Bottle #: 235 MS/MSD: No		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		Only test if first or second rain events of the year	



Handwritten initials: US, 2/8/17

Relinquished By: [Signature] Date/Time: 2/8/17 1030 Company: SHH	Received By: [Signature] Date/Time: 2-8-17 1030	Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X 48 Hour: ___ 5 Day: ___ Normal: ___
Relinquished By: [Signature] Date/Time: 2-8-17 1330 Company: A	Received By: [Signature] Date/Time: 2/8/17 1330	Sample Integrity: (Check) Intact: ___ On Ice: ___
Relinquished By: [Signature] Date/Time: 3/5/2017	Received By: [Signature] Date/Time: 1.4/1.7 1.3/1.4 1.1/1.4 0.9/1.2 2.4/2.9 2.1/2.4 2.1/2.4 0.8/1.1 1.1/1.2-5.0	Store samples for 6 months. Data Requirements: (Check) No Level: ___ All Level: ___ X



CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 001 Comp		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245), 2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP alpha-BHC (E609) Ammonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Cl ⁻ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Surfactants (MBAS) (SM5540C/E425.1) (E405.1) (SM5210B, BODCalc) BOD ₅ (20 degrees C) TCDD (and all congeners) (E1813B) Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments						
Test America Contact: Urvaishi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606; 520.904.6944 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments						
Test America's services under the CoC shall be performed in accordance with the T&Cs with Blanket Service Agreement #2015-15. Test America by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.		Field Manager: Mark Dominick 818.350.7312; 818.599.0702 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments						
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	M/MSD	TCDD (and all congeners) (E1813B)	BOD ₅ (20 degrees C) (E405.1) (SM5210B, BODCalc)	Surfactants (MBAS) (SM5540C/E425.1)	Cl ⁻ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E609)	2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245),	Comments	
	Outfall001_20170208_Comp	2/8/2017 10:50	WM	500 mL Poly	1	HNO ₃	90	No	X		X									
	Outfall001_20170208_Comp_Extra	2/8/2017 10:50	WM	1 L Glass Amber	2	None	110	No												
			WM	1 L Poly	1	None	115	No												
			WM	500 mL Poly	2	None	120	No												
			WM	500 mL Poly	2	None	130	No												
			WM	500 mL Poly	1	None	150	No												
			WM	500 mL Poly	1	H ₂ SO ₄	160	No												
			WM	1 L Glass Amber	2	None	170	No												
			WM	1 L Glass Amber	2	None	180	No												
			WM	1 L Poly	1	None	185	No												
			WM	benzocaine vials	1	HNO ₃	315	No												
			WM	1 L Glass Amber	2	None	110	No												
			WM	500 mL Poly	2	None	120	No												
			WM	500 mL Poly	2	None	130	No												
			WM	1 L Glass Amber	2	None	170	No												
			WM	1 L Glass Amber	2	None	180	No												

Relinquished By: <i>[Signature]</i>	Date/Time: 2/8/17 10:30 SKA	Company: SKA	Reported By: <i>[Signature]</i>	Date/Time: 2/8/17 10:30	Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X 48 Hour: ___ 5 Day: ___ Normal: ___
Relinquished By: <i>[Signature]</i>	Date/Time: 2/8/17 13:30	Company: []	Received By: <i>[Signature]</i>	Date/Time: 2/8/17 17:30	Sample Integrity: (Check) Intact: ___ On Ice: ___ Store samples for 6 months. Data Requirements: (Check) No Level IV: ___ All Level IV: ___ X
Relinquished By: <i>[Signature]</i>	Date/Time: 2/8/17 13:30	Company: []	Received By: <i>[Signature]</i>	Date/Time: 2/8/17 17:30	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175985-4

Login Number: 175985

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177315-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177315-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL001_20170217_GRAB	440-177315-1	N/A	Water	2/17/2017 1:00:00 PM	E120.1, E1664, E624, SM2540F, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177315-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Analysis for Human Bacteroides was subcontracted to Source Molecular laboratory.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170217 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

III.5. **INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. **COMPOUND IDENTIFICATION**

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. **TENTATIVELY IDENTIFIED COMPOUNDS**

The laboratory did not report TICs for this SDG.

III.9. **SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.

IV. **VARIOUS METHODS — GENERAL CHEMISTRY**

Marcia Hilchey of MEC^x reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA methods 1664A and 120.1*, *SAM348-357* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. **HOLDING TIMES**

The subcontract laboratory received the sample for Human Bacteroides analysis after the holding time requirement (24-48 hours); however, the sample result was not qualified as this is a presence/absence analysis. The analytical holding time for the remaining analyses, as noted below, were met.

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance



IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids. The case narrative noted that the negative controls were met for the Human Bacteroides test.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%. Positive controls were met for the Human Bacteroides test.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance or settleable solids analyses and no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773151

Analysis Method DHC qPCR

Sample Name OUTFALL001_20170217_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 1:00:00 PM Validation Level: 8

Lab Sample Name: SM-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	present			CEs/100	present		

Analysis Method E120.1

Sample Name OUTFALL001_20170217_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 1:00:00 PM Validation Level: 8

Lab Sample Name: 440-177315-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	84	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name OUTFALL001_20170217_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 1:00:00 PM Validation Level: 8

Lab Sample Name: 440-177315-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREASE	ND	5.3	1.5	mg/L	U	U	

Analysis Method E624

Sample Name OUTFALL001_20170217_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 1:00:00 PM Validation Level: 8

Lab Sample Name: 440-177315-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method *SM2540F*

Sample Name OUTFALL001_20170217_GRAB **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 1:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177315-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	0.30	0.10	0.10	ml/l/hr			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177315-1

Client Project/Site: Routine Outfall 001 Grab

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/23/2017 3:41:22 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/23/2017 3:41:23 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177315-1	Outfall001_20170217_Grab	Water	02/17/17 13:00	02/17/17 19:50
440-177315-3	TB-20170217	Water	02/17/17 13:00	02/17/17 19:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Job ID: 440-177315-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177315-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead..

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390730 and analytical batch 440-390827. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Client Sample ID: Outfall001_20170217_Grab

Lab Sample ID: 440-177315-1

Date Collected: 02/17/17 13:00

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 04:38	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 04:38	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 04:38	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					02/28/17 04:38	1
Dibromofluoromethane (Surr)	105		76 - 132					02/28/17 04:38	1
Toluene-d8 (Surr)	103		80 - 128					02/28/17 04:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		02/27/17 09:28	02/27/17 14:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	84		1.0	1.0	umhos/cm			02/21/17 10:01	1
Settleable Solids	0.30		0.10	0.10	mL/L/Hr			02/18/17 13:49	1

Client Sample ID: TB-20170217

Lab Sample ID: 440-177315-3

Date Collected: 02/17/17 13:00

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 04:11	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 04:11	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 04:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120					02/28/17 04:11	1
Dibromofluoromethane (Surr)	105		76 - 132					02/28/17 04:11	1
Toluene-d8 (Surr)	104		80 - 128					02/28/17 04:11	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Client Sample ID: Outfall001_20170217_Grab

Lab Sample ID: 440-177315-1

Date Collected: 02/17/17 13:00

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	390838	02/28/17 04:38	WK	TAL IRV
Total/NA	Analysis	120.1		1			389480	02/21/17 10:01	XL	TAL IRV
Total/NA	Prep	1664A			943 mL	1000 mL	390730	02/27/17 09:28	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390827	02/27/17 14:48	JSS	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	389106	02/18/17 13:49	RB	TAL IRV

Client Sample ID: TB-20170217

Lab Sample ID: 440-177315-3

Date Collected: 02/17/17 13:00

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	390838	02/28/17 04:11	WK	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-390838/4
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/27/17 20:10	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/27/17 20:10	1
Trichloroethane	ND		0.50	0.25	ug/L			02/27/17 20:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		02/27/17 20:10	1
Dibromofluoromethane (Surr)	101		76 - 132		02/27/17 20:10	1
Toluene-d8 (Surr)	105		80 - 128		02/27/17 20:10	1

Lab Sample ID: LCS 440-390838/5
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	25.8		ug/L		103	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.7		ug/L		103	63 - 130
1,1,2-Trichloroethane	25.0	25.9		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	26.0		ug/L		104	64 - 130
1,1-Dichloroethene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	26.3		ug/L		105	70 - 130
1,2-Dichloroethane	25.0	26.4		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	27.4		ug/L		110	67 - 130
1,3-Dichlorobenzene	25.0	25.8		ug/L		103	70 - 130
1,4-Dichlorobenzene	25.0	25.9		ug/L		103	70 - 130
Benzene	25.0	26.6		ug/L		106	68 - 130
Bromoform	25.0	26.2		ug/L		105	60 - 148
Bromomethane	25.0	22.4		ug/L		90	64 - 139
Carbon tetrachloride	25.0	26.9		ug/L		108	60 - 150
Chlorobenzene	25.0	25.2		ug/L		101	70 - 130
Dibromochloromethane	25.0	25.1		ug/L		100	69 - 145
Chloroethane	25.0	24.6		ug/L		98	64 - 135
Chloroform	25.0	25.2		ug/L		101	70 - 130
Chloromethane	25.0	23.2		ug/L		93	47 - 140
cis-1,3-Dichloropropene	25.0	26.4		ug/L		105	70 - 133
Bromodichloromethane	25.0	27.1		ug/L		109	70 - 132
Ethylbenzene	25.0	24.5		ug/L		98	70 - 130
Methylene Chloride	25.0	23.8		ug/L		95	52 - 130
Tetrachloroethene	25.0	25.2		ug/L		101	70 - 130
Toluene	25.0	24.4		ug/L		98	70 - 130
trans-1,2-Dichloroethene	25.0	27.4		ug/L		110	70 - 130
trans-1,3-Dichloropropene	25.0	25.0		ug/L		100	70 - 132
Vinyl chloride	25.0	21.7		ug/L		87	59 - 133
Trichloroethene	25.0	26.4		ug/L		106	70 - 130
cis-1,2-Dichloroethene	25.0	26.2		ug/L		105	70 - 133
Naphthalene	25.0	24.6		ug/L		98	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-390838/5

Matrix: Water

Analysis Batch: 390838

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	103		76 - 132
Toluene-d8 (Surr)	99		80 - 128

Lab Sample ID: 440-177200-D-4 MS

Matrix: Water

Analysis Batch: 390838

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Added	Result				
1,1,1-Trichloroethane	ND		25.0	26.3		ug/L		105	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	26.2		ug/L		105	63 - 130
1,1,2-Trichloroethane	ND		25.0	26.3		ug/L		105	70 - 130
1,1-Dichloroethane	ND		25.0	26.2		ug/L		105	65 - 130
1,1-Dichloroethene	ND		25.0	24.1		ug/L		96	70 - 130
1,2-Dichlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130
1,2-Dichloroethane	ND		25.0	27.0		ug/L		108	56 - 146
1,2-Dichloropropane	ND		25.0	27.4		ug/L		110	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130
Benzene	0.44	J,DX	25.0	27.1		ug/L		107	66 - 130
Bromoform	ND		25.0	26.3		ug/L		105	59 - 150
Bromomethane	ND		25.0	22.7		ug/L		91	62 - 131
Carbon tetrachloride	ND		25.0	27.5		ug/L		110	60 - 150
Chlorobenzene	ND		25.0	25.0		ug/L		100	70 - 130
Dibromochloromethane	ND		25.0	25.1		ug/L		100	70 - 148
Chloroethane	ND		25.0	25.3		ug/L		101	68 - 130
Chloroform	ND		25.0	25.7		ug/L		103	70 - 130
Chloromethane	ND		25.0	23.3		ug/L		93	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.3		ug/L		105	70 - 133
Bromodichloromethane	ND		25.0	27.2		ug/L		109	70 - 138
Ethylbenzene	ND		25.0	24.4		ug/L		97	70 - 130
Methylene Chloride	ND		25.0	24.4		ug/L		98	52 - 130
Tetrachloroethene	ND		25.0	25.8		ug/L		103	70 - 137
Toluene	ND		25.0	24.5		ug/L		98	70 - 130
trans-1,2-Dichloroethene	ND		25.0	27.5		ug/L		110	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.1		ug/L		100	70 - 138
Vinyl chloride	ND		25.0	22.5		ug/L		90	50 - 137
Trichloroethene	ND		25.0	26.9		ug/L		108	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.5		ug/L		106	70 - 130
Naphthalene	ND		25.0	25.5		ug/L		102	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	99		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177200-D-4 MSD
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	26.9		ug/L		107	70 - 130	2	20
1,1,1,2-Tetrachloroethane	ND		25.0	27.7		ug/L		111	63 - 130	5	30
1,1,2-Trichloroethane	ND		25.0	26.6		ug/L		106	70 - 130	1	25
1,1-Dichloroethane	ND		25.0	26.4		ug/L		106	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	24.2		ug/L		97	70 - 130	0	20
1,2-Dichlorobenzene	ND		25.0	26.6		ug/L		106	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	27.4		ug/L		110	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	27.6		ug/L		110	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	26.1		ug/L		105	70 - 130	0	20
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		105	70 - 130	0	20
Benzene	0.44	J,DX	25.0	27.3		ug/L		107	66 - 130	1	20
Bromoform	ND		25.0	27.9		ug/L		112	59 - 150	6	25
Bromomethane	ND		25.0	22.5		ug/L		90	62 - 131	1	25
Carbon tetrachloride	ND		25.0	28.1		ug/L		112	60 - 150	2	25
Chlorobenzene	ND		25.0	25.3		ug/L		101	70 - 130	1	20
Dibromochloromethane	ND		25.0	25.8		ug/L		103	70 - 148	3	25
Chloroethane	ND		25.0	25.1		ug/L		100	68 - 130	1	25
Chloroform	ND		25.0	25.9		ug/L		104	70 - 130	1	20
Chloromethane	ND		25.0	23.2		ug/L		93	39 - 144	0	25
cis-1,3-Dichloropropene	ND		25.0	26.8		ug/L		107	70 - 133	2	20
Bromodichloromethane	ND		25.0	27.7		ug/L		111	70 - 138	2	20
Ethylbenzene	ND		25.0	24.6		ug/L		98	70 - 130	1	20
Methylene Chloride	ND		25.0	24.6		ug/L		99	52 - 130	1	20
Tetrachloroethene	ND		25.0	25.5		ug/L		102	70 - 137	1	20
Toluene	ND		25.0	24.5		ug/L		98	70 - 130	0	20
trans-1,2-Dichloroethene	ND		25.0	27.7		ug/L		111	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	70 - 138	3	25
Vinyl chloride	ND		25.0	22.1		ug/L		88	50 - 137	2	30
Trichloroethene	ND		25.0	27.0		ug/L		108	70 - 130	0	20
cis-1,2-Dichloroethene	ND		25.0	26.6		ug/L		106	70 - 130	0	20
Naphthalene	ND		25.0	27.1		ug/L		108	60 - 140	6	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	98		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-389480/3
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0 umhos/cm			02/21/17 07:48	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-389480/4
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	766		umhos/cm		100	90 - 110

Lab Sample ID: 440-176949-B-1 DU
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	10		9.82		umhos/cm		4	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390730/1-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/27/17 09:28	02/27/17 14:48	1

Lab Sample ID: LCS 440-390730/2-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.1		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-390730/3-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390730

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	36.4		mg/L		91	78 - 114	1	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

GC/MS VOA

Analysis Batch: 390838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177315-1	Outfall001_20170217_Grab	Total/NA	Water	624	
440-177315-3	TB-20170217	Total/NA	Water	624	
MB 440-390838/4	Method Blank	Total/NA	Water	624	
LCS 440-390838/5	Lab Control Sample	Total/NA	Water	624	
440-177200-D-4 MS	Matrix Spike	Total/NA	Water	624	
440-177200-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 389106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177315-1	Outfall001_20170217_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 389480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177315-1	Outfall001_20170217_Grab	Total/NA	Water	120.1	
MB 440-389480/3	Method Blank	Total/NA	Water	120.1	
LCS 440-389480/4	Lab Control Sample	Total/NA	Water	120.1	
440-176949-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 390730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177315-1	Outfall001_20170217_Grab	Total/NA	Water	1664A	
MB 440-390730/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390730/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390730/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177315-1	Outfall001_20170217_Grab	Total/NA	Water	1664A	390730
MB 440-390730/1-A	Method Blank	Total/NA	Water	1664A	390730
LCS 440-390730/2-A	Lab Control Sample	Total/NA	Water	1664A	390730
LCSD 440-390730/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390730

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Grab

TestAmerica Job ID: 440-177315-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichloroethane
624		Water	Trichloroethene



CHAIN OF CUSTODY FORM

EDBPS BOX

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001_002_011_018] Outfall 001 Grab		Field Readings Field Readings: (Include units) Time of Readings: 12:55 DO 12.19 mg/L pH 6.96 pH unit Temp 9.49 °F Meter serial # 177315					
Test America's services under this CoC shall be performed in accordance with the TAOs within Blanket Service Agreement # 2015-18. Test America by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.		ANALYSIS REQUIRED							
Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Oil & Grease (E1604-HM) X VOCs - only 1,1-DCE, 1,2-DCA, TCE (E624) X Settleable Solids (E160.5 (SM2540F)) X Conductivity (SM2510B / E120.1) X							
Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Checked by: <i>Mark Dominick</i> Date/Time: 2-17-17/1311							
Sampler: Dan Smith		Comments:							
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	
Outfall 001	Outfall001_20170217_Grab	2/17/2017 16:15	WM	1 L Glass Amber	2	HCl	15	No	
			WM	40 mL VOA	3	HCl	30	No	
			WM	1L Poly	1	None	70	No	
			WM	500 mL Poly	1	None	75	No	
			WM	1 L Glass Amber	2	HCl	15	No	
	Outfall001_20170217_Grab_Extra	2/17/2017 16:30	WM	40 mL VOA	3	HCl	30	No	
			WM	500 mL Poly	1	None	75	No	
	Trip Blanks TB-20170217	2/17/2017 16:30	WQ	40 mL VOA	3	HCl	30	No	
								440-177315 Chain of Custody	
Relinquished By: <i>[Signature]</i>		Date/Time: 2/17/17 16:15		Company: JHA		Received By: <i>[Signature]</i>		Date/Time: 2-17-17 16:30	
Relinquished By: <i>[Signature]</i>		Date/Time: 2-17-17 16:30		Company:		Received By: <i>[Signature]</i>		Date/Time: 2/17/17 19:50	
Relinquished By:		Date/Time:		Company:		Received By:		Date/Time:	
								Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X ___ 48 Hour: ___ 5 Day: ___ Normal: ___ Sample integrity: (Check) On Ice: ___ Intact: ___ Store samples for 6 months: ___ Data Requirements: (Check) No Level IV: ___ All Level IV: ___ X ___	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177315-1

Login Number: 177315

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177396-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177396-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170218_Comp	440-177396-1	N/A	Water	2/18/17 10:40 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall001_20170218_Comp_F	440-177396-3	N/A	Water	2/18/17 10:40 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177396-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine, TA-Denver, and TA-Sacramento.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- The case narrative for this SDG indicates extra sample volume received was not listed on the COC.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except TCDD and TCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample results above the reporting limit. The peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall001_20170218_Comp; however, as the



associated isomer was not qualified as a nondetect, total HpCDD was qualified as estimated (J). The reviewer verified that peaks comprising the results for remaining totals in the sample included more peaks than the method blank totals. The sample results for totals HxCDD, HxCDF, HpCDF, and PeCDF were therefore qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for results flagged by the laboratory as EMPC values. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. As 2,3,7,8-TCDF was not detected in the initial analysis of the sample, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8 AND 245.1 — METALS AND MERCURY

Michael Cherny of MEC^X reviewed the SDG on April 14, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall001_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis five days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with analysis of total metals; this review is based on summary data for that CRQL.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total metals; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total metals; this review is based on summary data only for this ICSA analysis.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.

V.3.2. LABORATORY CONTROL SAMPLES

The recovery of alpha BHC was within the laboratory control limits of 37-134%.



V.3.3. **SURROGATE RECOVERY**

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the sample of this SDG. Recoveries of alpha BHC and the RPD were within the laboratory control limits of 40-120% and $\leq 30\%$, respectively.

V.4. **FIELD QC SAMPLES**

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

V.5. **COMPOUND IDENTIFICATION**

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. **EPA METHOD 314.0 — PERCHLORATE**

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. **HOLDING TIMES**

The analytical holding time, 28 days, was met.

VI.2. **CALIBRATION**

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.



VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.



Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 180.1 and 300.0*, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, and 5540* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VIII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were provided by the laboratory.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPD for BOD was $\leq 20\%$.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample Outfall001_20170218_Comp for TSS. The RPD was $\leq 10\%$.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.



VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit reporting requirements. Reported nondetects are valid to the MDL.

Turbidity in sample Outfall001_20170218_Comp was reported from a 20× dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773961

Analysis Method E1613B

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000048	0.00010	0.00000072	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00061	0.00010	0.00000025	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000024	0.000050	0.00000068	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000058	0.000050	0.00000017	ug/L	MB		
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000081	0.000050	0.00000094	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000010	0.000050	0.00000045	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000011	0.000050	0.00000048	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000012	0.000050	0.00000045	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000023	0.000050	0.00000055	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000050	0.00000042	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000016	0.000050	0.00000044	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000048	0.000050	0.00000042	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000050	0.00000055	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000012	0.000050	0.00000040	ug/L	J,DXMBq	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000050	0.00000040	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000030	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000040	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000049	0.000050	0.00000081	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00013	0.000050	0.00000017	ug/L	MB	J	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000019	0.000050	0.00000043	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000013	0.000050	0.00000049	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000025	0.000050	0.00000041	ug/L	J,DXMBq	J	B, DNQ, *III

Friday, April 14, 2017

Analysis Method E1613B

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000050	0.00000055	ug/L	U	U
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000010	0.00000030	ug/L	U	U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000040	ug/L	U	U

Analysis Method E180.1

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	160	2.0	0.80	NTU			

Analysis Method E200.8

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	5.5	2.0	0.50	ug/L			
Lead	T	7439-92-1	4.1	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Sample Name Outfall001_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	3.6	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall001_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 10:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177396-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 10:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.2	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.99	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.99	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	4.0	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 10:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 10:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0050	0.0025	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 10:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	5.91	0.493	ug/L	U	U	

Analysis Method E625

2,4-Dinitrotoluene	N	121-14-2	ND	4.93	1.97	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.93	1.97	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	4.93	0.985	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	4.93	0.985	ug/L	U	U

Analysis Method SM2540C

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	140	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	120	10	5.0	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.9	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	ND	0.10	0.050	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177396-1

Client Project/Site: Routine Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/14/2017 9:29:46 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/14/2017 9:29:46 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177396-1	Outfall001_20170218_Comp	Water	02/18/17 10:40	02/18/17 18:40
440-177396-3	Outfall001_20170218_Comp_F	Water	02/18/17 10:40	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Job ID: 440-177396-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177396-1

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.7° C, 1.0° C and 1.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Outfall001_20170218_Comp_Extra (440-177396-2). received #2 not listed on coc.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		5.91	0.493	ug/L		02/25/17 09:17	02/28/17 15:55	1
Bis(2-ethylhexyl) phthalate	ND		4.93	1.97	ug/L		02/25/17 09:17	02/28/17 15:55	1
N-Nitrosodimethylamine	ND		4.93	0.985	ug/L		02/25/17 09:17	02/28/17 15:55	1
Pentachlorophenol	ND		4.93	0.985	ug/L		02/25/17 09:17	02/28/17 15:55	1
2,4-Dinitrotoluene	ND		4.93	1.97	ug/L		02/25/17 09:17	02/28/17 15:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	72		40 - 120	02/25/17 09:17	02/28/17 15:55	1
2-Fluorobiphenyl	65		50 - 120	02/25/17 09:17	02/28/17 15:55	1
2-Fluorophenol	58		30 - 120	02/25/17 09:17	02/28/17 15:55	1
Nitrobenzene-d5	67		45 - 120	02/25/17 09:17	02/28/17 15:55	1
Phenol-d6	53		35 - 120	02/25/17 09:17	02/28/17 15:55	1
Terphenyl-d14	42		37 - 144	02/25/17 09:17	02/28/17 15:55	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/21/17 06:54	02/23/17 00:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	58		10 - 150	02/21/17 06:54	02/23/17 00:54	1
DCB Decachlorobiphenyl (Surr)	74		18 - 134	02/21/17 06:54	02/23/17 00:54	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.2		0.50	0.25	mg/L			02/20/17 07:49	1
Nitrate as N	0.99		0.11	0.055	mg/L			02/20/17 07:49	1
Nitrite as N	ND		0.15	0.070	mg/L			02/20/17 07:49	1
Sulfate	4.0		0.50	0.25	mg/L			02/18/17 20:52	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 16:17	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.99		0.15	0.070	mg/L			03/03/17 11:30	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
2,3,7,8-TCDF	ND		0.000010	0.0000003	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,7,8-PeCDF	0.00000048	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,4,7,8-HxCDD	0.0000011	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,6,7,8-HxCDD	0.0000023	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 02:06	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	0.0000016	J,DX	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,4,7,8-HxCDF	0.0000010	J,DX	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,6,7,8-HxCDF	0.0000012	J,DX MB	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
2,3,4,6,7,8-HxCDF	0.0000012	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,4,6,7,8-HpCDD	0.000058	MB	0.000050	0.0000017	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,4,6,7,8-HpCDF	0.000024	J,DX MB q	0.000050	0.0000006	ug/L		02/27/17 08:20	03/01/17 02:06	1
1,2,3,4,7,8,9-HpCDF	0.00000081	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	03/01/17 02:06	1
OCDD	0.00061	MB	0.00010	0.0000025	ug/L		02/27/17 08:20	03/01/17 02:06	1
OCDF	0.000048	J,DX MB	0.00010	0.0000007	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total TCDD	ND		0.000010	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total TCDF	ND		0.000010	0.0000003	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total PeCDD	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total PeCDF	0.0000025	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total HxCDD	0.000013	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total HxCDF	0.000019	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total HpCDD	0.00013	MB	0.000050	0.0000017	ug/L		02/27/17 08:20	03/01/17 02:06	1
Total HpCDF	0.000049	J,DX MB q	0.000050	0.0000008	ug/L		02/27/17 08:20	03/01/17 02:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	77		25 - 164				02/27/17 08:20	03/01/17 02:06	1
13C-2,3,7,8-TCDF	77		24 - 169				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,7,8-PeCDD	59		25 - 181				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,7,8-PeCDF	69		24 - 185				02/27/17 08:20	03/01/17 02:06	1
13C-2,3,4,7,8-PeCDF	76		21 - 178				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,4,7,8-HxCDD	97		32 - 141				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,6,7,8-HxCDD	83		28 - 130				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,4,7,8-HxCDF	90		26 - 152				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,6,7,8-HxCDF	83		26 - 123				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147				02/27/17 08:20	03/01/17 02:06	1
13C-2,3,4,6,7,8-HxCDF	83		28 - 136				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143				02/27/17 08:20	03/01/17 02:06	1
13C-1,2,3,4,7,8,9-HpCDF	75		26 - 138				02/27/17 08:20	03/01/17 02:06	1
13C-OCDD	57		17 - 157				02/27/17 08:20	03/01/17 02:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197				02/27/17 08:20	03/01/17 02:06	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:54	1
Copper	5.5		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:54	1
Lead	4.1		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:54	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:54	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 20:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	160		2.0	0.80	NTU			02/18/17 22:40	20
Total Dissolved Solids	140		10	5.0	mg/L			02/23/17 08:39	1
Total Suspended Solids	120		10	5.0	mg/L			02/24/17 11:16	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 18:47	1
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/18/17 21:13	1
Biochemical Oxygen Demand	1.9	J,DX	2.0	0.50	mg/L			02/20/17 06:41	1

Client Sample ID: Outfall001_20170218_Comp_F

Lab Sample ID: 440-177396-3

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/23/17 15:59	02/27/17 15:32	1
Copper	3.6	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:32	1
Lead	ND	QP	1.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:32	1
Selenium	ND	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:32	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/23/17 23:14	02/25/17 04:07	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			1015 mL	2 mL	390550	02/25/17 09:17	JC1	TAL IRV
Total/NA	Analysis	625		1			390988	02/28/17 15:55	DF	TAL IRV
Total/NA	Prep	608			995 mL	2 mL	389220	02/21/17 06:54	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			389885	02/23/17 00:54	KS	TAL IRV
Total/NA	Analysis	300.0		1			389088	02/18/17 20:52	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389206	02/20/17 07:49	NN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389207	02/20/17 07:49	NN	TAL IRV
Total/NA	Analysis	314.0		1			389485	02/21/17 16:17	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391866	03/03/17 11:30	TLN	TAL IRV
Total/NA	Prep	1613B			1004.7 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B		1			152750	03/01/17 02:06	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:54	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390895	02/27/17 20:12	DB	TAL IRV
Total/NA	Analysis	245.1		1			391252	02/28/17 20:17	DB	TAL IRV
Total/NA	Analysis	180.1		20			389130	02/18/17 22:40	RB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	100 mL	1000 mL	390386	02/24/17 11:16	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 17:59	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	390502	02/24/17 18:47	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	389129	02/18/17 21:13	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			389203	02/20/17 06:41	XL	TAL IRV

Client Sample ID: Outfall001_20170218_Comp_F

Lab Sample ID: 440-177396-3

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 15:32	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	390193	02/23/17 16:57	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390274	02/23/17 23:14	DB	TAL IRV
Dissolved	Analysis	245.1		1			391322	02/25/17 04:07	B1H	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-390550/1-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 390550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	76		40 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorobiphenyl	62		50 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorophenol	58		30 - 120	02/25/17 09:17	02/28/17 11:32	1
Nitrobenzene-d5	60		45 - 120	02/25/17 09:17	02/28/17 11:32	1
Phenol-d6	53		35 - 120	02/25/17 09:17	02/28/17 11:32	1
Terphenyl-d14	84		37 - 144	02/25/17 09:17	02/28/17 11:32	1

Lab Sample ID: LCS 440-390550/2-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	7.592		ug/L		76	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	8.366		ug/L		84	10 - 150
N-Nitrosodimethylamine	10.0	6.704		ug/L		67	26 - 117
Pentachlorophenol	20.0	15.14		ug/L		76	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	84		40 - 120
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	63		30 - 120
Nitrobenzene-d5	69		45 - 120
Phenol-d6	61		35 - 120
Terphenyl-d14	80		37 - 144

Lab Sample ID: 440-177394-K-1-A MS

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.4	7.480		ug/L		72	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.4	3.066	J,DX	ug/L		29	10 - 150
N-Nitrosodimethylamine	ND		10.4	6.515		ug/L		63	12 - 123
Pentachlorophenol	ND		20.8	15.07		ug/L		72	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	75		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	59		30 - 120
Nitrobenzene-d5	64		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-K-1-A MS
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390550

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Phenol-d6	60		35 - 120
Terphenyl-d14	30	LG	37 - 144

Lab Sample ID: 440-177394-K-1-B MSD
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	
				Result	Qualifier				Limits	RPD	Limit	
2,4,6-Trichlorophenol	ND		9.76	6.996		ug/L		72	37 - 144	7	30	
Bis(2-ethylhexyl) phthalate	ND		9.76	3.659	J,DX	ug/L		38	10 - 150	18	25	
N-Nitrosodimethylamine	ND		9.76	6.496		ug/L		67	12 - 123	0	35	
Pentachlorophenol	ND		19.5	14.08		ug/L		72	14 - 150	7	25	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	73		40 - 120
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	57		30 - 120
Nitrobenzene-d5	64		45 - 120
Phenol-d6	60		35 - 120
Terphenyl-d14	36	LG	37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-389220/1-A
Matrix: Water
Analysis Batch: 390125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389220

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		02/20/17 07:21	02/23/17 17:11	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	43		10 - 150	02/20/17 07:21	02/23/17 17:11	1
DCB Decachlorobiphenyl (Surr)	59		18 - 134	02/20/17 07:21	02/23/17 17:11	1

Lab Sample ID: LCS 440-389220/5-A
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
alpha-BHC	0.200	0.131	PI	ug/L		66	37 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	58	PI	10 - 150
DCB Decachlorobiphenyl (Surr)	75	PI	18 - 134

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-177394-H-1-A MSD
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	ND		0.194	0.144		ug/L		74	40 - 120	12	30
Surrogate	%Recovery	MSD Qualifier	MSD	Limits							
Tetrachloro-m-xylene	65			10 - 150							
DCB Decachlorobiphenyl (Surr)	91			18 - 134							

Lab Sample ID: 440-177394-I-1-A MS
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	ND		0.207	0.163		ug/L		78	40 - 120		
Surrogate	%Recovery	MS Qualifier	MS	Limits							
Tetrachloro-m-xylene	72			10 - 150							
DCB Decachlorobiphenyl (Surr)	86			18 - 134							

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389088/4
Matrix: Water
Analysis Batch: 389088

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		0.50	0.25	mg/L			02/18/17 13:10	1

Lab Sample ID: LCS 440-389088/2
Matrix: Water
Analysis Batch: 389088

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	5.00	5.10		mg/L		102	90 - 110		

Lab Sample ID: 440-177360-B-12 MS
Matrix: Water
Analysis Batch: 389088

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	44		25.0	74.2		mg/L		119	80 - 120		

Lab Sample ID: 440-177360-B-12 MSD
Matrix: Water
Analysis Batch: 389088

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	44		25.0	72.1		mg/L		110	80 - 120	3	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 440-389206/3
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/20/17 07:21	1
Nitrite as N	ND		0.15	0.070	mg/L			02/20/17 07:21	1

Lab Sample ID: LCS 440-389206/2
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.18		mg/L		105	90 - 110
Nitrite as N	1.52	1.62		mg/L		106	90 - 110

Lab Sample ID: 440-177394-A-1 MS
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.87		1.13	2.03		mg/L		103	80 - 120
Nitrite as N	ND		1.52	1.70		mg/L		112	80 - 120

Lab Sample ID: 440-177394-A-1 MSD
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nitrate as N	0.87		1.13	2.07		mg/L		106	80 - 120	2	20
Nitrite as N	ND		1.52	1.74		mg/L		114	80 - 120	2	20

Lab Sample ID: MB 440-389207/3
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/20/17 07:21	1

Lab Sample ID: LCS 440-389207/2
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.45		mg/L		109	90 - 110

Lab Sample ID: 440-177394-A-1 MS
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	8.2		5.00	13.5		mg/L		106	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-177394-A-1 MSD
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	8.2		5.00	13.7		mg/L		111	80 - 120	2	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-389485/3
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 08:57	1

Lab Sample ID: LCS 440-389485/2
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.5		ug/L		102	85 - 115

Lab Sample ID: MRL 440-389485/5
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.92	J,DX	ug/L		98	75 - 125

Lab Sample ID: 440-177165-A-1 MS
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.6		ug/L		110	80 - 120

Lab Sample ID: 440-177165-A-1 MSD
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.7		ug/L		111	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDF	0.00000140	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDF	0.00000112	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,6,7,8-HxCDF	0.000000796	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDD	0.00000372	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDF	0.00000131	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDD	0.0000108	J,DX	0.00010	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDF	0.00000612	J,DX	0.00010	0.0000015	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDD	0.000000537	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDD	0.00000118	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDF	0.00000331	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDD	0.00000696	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDF	0.00000131	J,DX q	0.000050	0.0000012	ug/L		02/27/17 08:20	02/28/17 23:14	1
	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	52		25 - 164				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,7,8-TCDF	53		24 - 169				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDF	45		24 - 185				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,7,8-PeCDF	49		21 - 178				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				02/27/17 08:20	02/28/17 23:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147	02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	02/27/17 08:20	02/28/17 23:14	1
13C-OCDD	35		17 - 157	02/27/17 08:20	02/28/17 23:14	1
Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	02/27/17 08:20	02/28/17 23:14	1

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000223		ug/L		111	67 - 158
2,3,7,8-TCDF	0.000200	0.000193		ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00120		ug/L		120	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00101		ug/L		101	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100		ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922		ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000968		ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00118	MB	ug/L		118	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000993	MB	ug/L		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000998		ug/L		100	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170
Isotope Dilution	LCS LCS		Limits				
13C-2,3,7,8-TCDD	62		20 - 175				
13C-2,3,7,8-TCDF	63		22 - 152				
13C-1,2,3,7,8-PeCDD	48		21 - 227				
13C-1,2,3,7,8-PeCDF	53		21 - 192				
13C-2,3,4,7,8-PeCDF	59		13 - 328				
13C-1,2,3,4,7,8-HxCDD	75		21 - 193				
13C-1,2,3,6,7,8-HxCDD	71		25 - 163				
13C-1,2,3,4,7,8-HxCDF	70		19 - 202				
13C-1,2,3,6,7,8-HxCDF	63		21 - 159				
13C-1,2,3,7,8,9-HxCDF	59		17 - 205				
13C-2,3,4,6,7,8-HxCDF	66		22 - 176				
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

<i>Isotope Dilution</i>	LCS LCS		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-OCDD	55		13 - 199

<i>Surrogate</i>	LCS LCS		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-152230/3-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152230

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	%Rec.		RPD	
							<i>Limits</i>	<i>RPD</i>	<i>Limit</i>	<i>Limit</i>
2,3,7,8-TCDD	0.000200	0.000235		ug/L		117	67 - 158	5	50	
2,3,7,8-TCDF	0.000200	0.000211		ug/L		106	75 - 158	9	50	
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	0	50	
1,2,3,7,8-PeCDF	0.00100	0.00114	MB	ug/L		114	80 - 134	2	50	
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160	2	50	
1,2,3,4,7,8-HxCDD	0.00100	0.000949		ug/L		95	70 - 164	5	50	
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134	0	50	
1,2,3,7,8,9-HxCDD	0.00100	0.000959		ug/L		96	64 - 162	4	50	
1,2,3,4,7,8-HxCDF	0.00100	0.000950		ug/L		95	72 - 134	2	50	
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	4	50	
1,2,3,7,8,9-HxCDF	0.00100	0.00106	MB	ug/L		106	78 - 130	1	50	
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156	0	50	
1,2,3,4,6,7,8-HpCDD	0.00100	0.00116	MB	ug/L		116	70 - 140	2	50	
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122	9	50	
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939		ug/L		94	78 - 138	6	50	
OCDD	0.00200	0.00209	MB	ug/L		104	78 - 144	4	50	
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	9	50	

<i>Isotope Dilution</i>	LCSD LCSD		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	51		20 - 175
13C-2,3,7,8-TCDF	51		22 - 152
13C-1,2,3,7,8-PeCDD	40		21 - 227
13C-1,2,3,7,8-PeCDF	44		21 - 192
13C-2,3,4,7,8-PeCDF	50		13 - 328
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,6,7,8-HxCDD	52		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-2,3,4,6,7,8-HxCDF	52		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	41		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	47		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	50		20 - 186
13C-OCDD	38		13 - 199

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152230/3-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152230

Surrogate	<i>LCS</i> D %Recovery	<i>LCS</i> D Qualifier	Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:44		1
Copper	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44		1
Lead	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44		1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44		1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	73.8		ug/L		92	85 - 115
Copper	80.0	75.2		ug/L		94	85 - 115
Lead	80.0	71.8		ug/L		90	85 - 115
Selenium	80.0	74.2		ug/L		93	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130
Copper	4.1		80.0	79.8		ug/L		95	70 - 130
Lead	1.9		80.0	77.1		ug/L		94	70 - 130
Selenium	ND		80.0	72.9		ug/L		91	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	75.1	BA	ug/L		94	70 - 130	200	20
Copper	4.1		80.0	77.7	BA	ug/L		92	70 - 130	200	20
Lead	1.9		80.0	75.3	BA	ug/L		92	70 - 130	200	20
Selenium	ND		80.0	72.2	BA	ug/L		90	70 - 130	200	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/23/17 15:59	02/27/17 14:41	1
Copper	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1
Lead	ND		1.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1
Selenium	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	76.7		ug/L		96	85 - 115
Copper	80.0	90.7		ug/L		113	85 - 115
Lead	80.0	78.2		ug/L		98	85 - 115
Selenium	80.0	78.6		ug/L		98	85 - 115

Lab Sample ID: 440-177395-A-3-C MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND	QP	80.0	75.7		ug/L		95	70 - 130
Copper	2.9	QP	80.0	78.6		ug/L		95	70 - 130
Lead	ND	QP	80.0	76.8		ug/L		96	70 - 130
Selenium	ND	QP	80.0	76.0		ug/L		95	70 - 130

Lab Sample ID: 440-177395-A-3-D MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND	QP	80.0	78.9		ug/L		99	70 - 130	4	20
Copper	2.9	QP	80.0	79.7		ug/L		96	70 - 130	1	20
Lead	ND	QP	80.0	79.5		ug/L		99	70 - 130	3	20
Selenium	ND	QP	80.0	80.3		ug/L		100	70 - 130	6	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390895/1-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390895

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 19:10	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-390895/2-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.29		ug/L		104	85 - 115

Lab Sample ID: 440-177985-A-1-B MS
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.01		ug/L		100	70 - 130

Lab Sample ID: 440-177985-A-1-C MSD
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.26		ug/L		103	70 - 130	3	20

Lab Sample ID: MB 440-390193/1-B
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390274

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/23/17 23:14	02/25/17 03:45	1

Lab Sample ID: LCS 440-390193/2-B
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390274

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.87		ug/L		98	85 - 115

Lab Sample ID: 440-177550-B-4-C MS
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390274

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.83		ug/L		98	70 - 130

Lab Sample ID: 440-177550-B-4-D MSD
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390274

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.07		ug/L		101	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-389130/5
Matrix: Water
Analysis Batch: 389130

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/18/17 22:40	1

Lab Sample ID: 440-177395-I-1 DU
Matrix: Water
Analysis Batch: 389130

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	50		50.4		NTU		0	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177195-K-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	190		191		mg/L		0.5	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-390386/1
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/24/17 11:16	1

Lab Sample ID: LCS 440-390386/2
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	953		mg/L		95	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-177396-1 DU
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Outfall001_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	120		124		mg/L		0.8	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-390502/10
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 17:48	1

Lab Sample ID: LCS 440-390502/11
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	5.140		mg/L		103	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: MRL 440-390502/9
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2640		mg/L		132	10 - 200

Lab Sample ID: 440-177923-C-1 MS
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.460		mg/L		109	90 - 110

Lab Sample ID: 440-177923-C-1 MSD
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.240		mg/L		105	90 - 110	4	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-389129/3
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/18/17 21:13	1

Lab Sample ID: LCS 440-389129/4
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.260		mg/L		104	90 - 110

Lab Sample ID: 720-77778-B-1 MS
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.062	J,DX	0.250	0.286		mg/L		89	50 - 125

Lab Sample ID: 720-77778-B-1 MSD
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.062	J,DX	0.250	0.285		mg/L		89	50 - 125	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-389203/1
Matrix: Water
Analysis Batch: 389203

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/20/17 06:41	1

Lab Sample ID: LCS 440-389203/4
Matrix: Water
Analysis Batch: 389203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	191		mg/L		96	85 - 115

Lab Sample ID: LCSD 440-389203/5
Matrix: Water
Analysis Batch: 389203

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	194		mg/L		98	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

GC/MS Semi VOA

Prep Batch: 390550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	625	
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 390988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	625	390550
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	390550
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	390550
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	390550
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	390550

GC Semi VOA

Prep Batch: 389220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	608	
MB 440-389220/1-A	Method Blank	Total/NA	Water	608	
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608	
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608	

Analysis Batch: 389885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	608 Pesticides	389220
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608 Pesticides	389220
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	389220
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	389220

Analysis Batch: 390125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389220/1-A	Method Blank	Total/NA	Water	608 Pesticides	389220

HPLC/IC

Analysis Batch: 389088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	300.0	
MB 440-389088/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389088/2	Lab Control Sample	Total/NA	Water	300.0	
440-177360-B-12 MS	Matrix Spike	Total/NA	Water	300.0	
440-177360-B-12 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 389206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	300.0	
MB 440-389206/3	Method Blank	Total/NA	Water	300.0	
LCS 440-389206/2	Lab Control Sample	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

HPLC/IC (Continued)

Analysis Batch: 389206 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-177394-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 389207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	300.0	
MB 440-389207/3	Method Blank	Total/NA	Water	300.0	
LCS 440-389207/2	Lab Control Sample	Total/NA	Water	300.0	
440-177394-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-177394-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 389485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	314.0	
MB 440-389485/3	Method Blank	Total/NA	Water	314.0	
LCS 440-389485/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-389485/5	Lab Control Sample	Total/NA	Water	314.0	
440-177165-A-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-177165-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 391866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	1613B	
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	1613B	152230
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	152230
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	152230
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152230

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Metals (Continued)

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.2	389636
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	389636

Filtration Batch: 390193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-390193/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-390193/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177550-B-4-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177550-B-4-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390274

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	245.1	390193
MB 440-390193/1-B	Method Blank	Dissolved	Water	245.1	390193
LCS 440-390193/2-B	Lab Control Sample	Dissolved	Water	245.1	390193
440-177550-B-4-C MS	Matrix Spike	Dissolved	Water	245.1	390193
440-177550-B-4-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	390193

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.8	390172
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390172

Prep Batch: 390895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	245.1	
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 391252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	245.1	390895
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	390895
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	390895
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	390895
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	390895

Analysis Batch: 391322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	245.1	390274
MB 440-390193/1-B	Method Blank	Dissolved	Water	245.1	390274
LCS 440-390193/2-B	Lab Control Sample	Dissolved	Water	245.1	390274

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Metals (Continued)

Analysis Batch: 391322 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177550-B-4-C MS	Matrix Spike	Dissolved	Water	245.1	390274
440-177550-B-4-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	390274

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

General Chemistry

Analysis Batch: 389129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	SM 5540C	
MB 440-389129/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-389129/4	Lab Control Sample	Total/NA	Water	SM 5540C	
720-77778-B-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
720-77778-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 389130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	180.1	
MB 440-389130/5	Method Blank	Total/NA	Water	180.1	
440-177395-I-1 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	SM5210B	
USB 440-389203/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-389203/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-389203/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

General Chemistry (Continued)

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177195-K-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 390386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	SM 2540D	
MB 440-390386/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-390386/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177396-1 DU	Outfall001_20170218_Comp	Total/NA	Water	SM 2540D	

Analysis Batch: 390502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-390502/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-390502/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-390502/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LG	LG=Surrogate recovery below the acceptance limits

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
BA	Relative percent difference out of control
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
608 Pesticides	608	Water	alpha-BHC
625	625	Water	2,4,6-Trichlorophenol
625	625	Water	2,4-Dinitrotoluene
625	625	Water	Bis(2-ethylhexyl) phthalate
625	625	Water	N-Nitrosodimethylamine
625	625	Water	Pentachlorophenol
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM



440-177396 Chain of Custody

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 001 Comp		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245), (SVOCs E625) 2,4,6 TCP, 2,4 Dinitrotoluene, Bis(2- ethylhexyl)phthalate, NDMA, PCP alpha-BHC (E609) Armonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Perchlorate (E300) CF, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Surfactants (MBAS) (SM540C/E425.1) BOD5 (20 degrees C) (E405.1 (SM5210B BODCalc)) TCDD (and all congeners) (E1613B)					
Test America Contact: Urvashti Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se					
Test America's services under this CoC shall be performed in accordance with the TACS within Blarney Service Agreement 2015-16-17 furnished by and between Halley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity					
Sample Description Outfall001_20170218_Comp	Sample I.D. Outfall001_20170218_Comp	Sampling Date/Time 2/18/2017/10:40	Sample Matrix WM	Container Type 500 mL Poly	# of Cont. 1	Preservative HNO3	Bottle # 90	MS/MSD No	Comments Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Sample Description Outfall002_20170218_Comp_Extra	Sample I.D. Outfall002_20170218_Comp_Extra	Sampling Date/Time 2/19/2017/10:40	Sample Matrix WM	Container Type 500 mL Poly	# of Cont. 2	Preservative None	Bottle # 110	MS/MSD No	Comments Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Sample Description Outfall003_20170218_Comp_Extra	Sample I.D. Outfall003_20170218_Comp_Extra	Sampling Date/Time 2/19/2017/18:40	Sample Matrix WM	Container Type 500 mL Poly	# of Cont. 2	Preservative None	Bottle # 120	MS/MSD No	Comments Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Sample Description Outfall004_20170218_Comp_Extra	Sample I.D. Outfall004_20170218_Comp_Extra	Sampling Date/Time 2/19/2017/18:40	Sample Matrix WM	Container Type 500 mL Poly	# of Cont. 2	Preservative None	Bottle # 130	MS/MSD No	Comments Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Sample Description Outfall005_20170218_Comp_Extra	Sample I.D. Outfall005_20170218_Comp_Extra	Sampling Date/Time 2/19/2017/18:40	Sample Matrix WM	Container Type 1 L Glass Amber	# of Cont. 2	Preservative None	Bottle # 170	MS/MSD No	Comments Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Sample Description Outfall006_20170218_Comp_Extra	Sample I.D. Outfall006_20170218_Comp_Extra	Sampling Date/Time 2/19/2017/18:40	Sample Matrix WM	Container Type 1 L Glass Amber	# of Cont. 2	Preservative None	Bottle # 180	MS/MSD No	Comments Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Relinquished By [Signature]		Date/Time 02/18/17	Company JHIA	Received By [Signature]		Date/Time 2/18/17 10:00	Turn-around time: (Check) 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>		
Relinquished By [Signature]		Date/Time 2/19/17 18:40	Company JHIA	Received By [Signature]		Date/Time 2/19/17 18:40	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/> Store samples for 6 months. Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>		

102209

Collect from 160 tests for BAC

0.7/1.0 0.4/0.7 1.0/1.9
 12-SSU



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Patel, Urvashi	OC No: 40-107782.1
Client Contact: Shipping/Receiving		Phone: urvashi.patel@testamericainc.com	E-Mail: urvashi.patel@testamericainc.com	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-177396-1
Address: 13715 Rider Trail North,		Due Date Requested: 3/2/2017		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
City: Earth City		TAT Requested (days):		
State, Zip: MO, 63045		PO #:		
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:		
Email:		Project #:		
Project Name: Boeing NPDES SSFL outfalls		44009879		
Site:		SSOW#:		
Sample Identification - Client ID (Lab ID)		Sample Date		Analysis Requested
Outfall001_20170218_Comp (440-177396-1)		2/18/17		
Sample Type (C=Comp, G=grab)		Sample Time		Perform MS/MSD (Yes or No)
Water		10:40 Pacific		
Matrix (W=water, S=solid, G=wastewater, BT=BASE, A=Air)		Preservation Code:		Field Filtered Sample (Yes or No)
Water		Water		
Special Instructions/Note:		Total Number of containers		Special Instructions/Note: Boeing SSFL, DO NOT FILTER; use prep date from preservation
		2		
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>				
Possible Hazard Identification				
Unconfirmed				
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2				
Empty Kit Relinquished by:				
Relinquished by: <i>VuBa</i>		Date: 2/20/17 17:00		Company: TASA
Relinquished by:		Date/Time:		Company:
Relinquished by:		Date/Time:		Company:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM	Carrier Tracking No(s):	COC No.
Client Contact: Shipping/Receiving		Patel, Urvashi	Patel, Urvashi	State of Origin:	440-107830-1
Company: TestAmerica Laboratories, Inc.		E-Mail: urvashi.patel@testamericainc.com		Page:	Page 1 of 1
Address: 880 Riverside Parkway, West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:		Accreditations Required (See note): State Program - California		Job #:	440-177396-1
Project Name: Boeing NPDES SSFL outfalls Site:		Due Date Requested: 3/2/2017	Analysis Requested		
TAT Requested (days):		1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers		
PO #:		Perform MS/MSD (Yes or No)	X		
W/O #:		Field Filtered Sample (Yes or No)	X		
Project #: 44009879		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, G=wastewat, BT=Tissue, A=Air)
SSOW#:		2/18/17	10:40 Pacific		Water
Preservation Code:		Special Instructions/Note:			
Outfall001_20170218_Comp (440-177396-1)		See OAS, Boeing_w/u to zero, ug/L; Use Boeing glassware			
<p><i>#2</i></p> <p><i>44-27396-1</i></p>					
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 2					
Empty Kit Relinquished by:					
Date:					
Relinquished by: <i>Su Bardi</i>		Date: <i>2/20/17 17:00</i>		Company: <i>EAI</i>	
Relinquished by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <i>See p. 1, 2</i>	
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Special Instructions/QC Requirements:					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177396-1

Login Number: 177396

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177396-1

Login Number: 177396

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:15 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-177396-1	Outfall001_20170218_Comp	77	77	59	69	76	97	83	90
MB 320-152230/1-A	Method Blank	52	53	39	45	49	58	54	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-177396-1	Outfall001_20170218_Comp	83	74	83	66	75	75	57
MB 320-152230/1-A	Method Blank	53	49	57	40	48	47	35

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152230/2-A	Lab Control Sample	62	63	48	53	59	75	71	70
LCSD 320-152230/3-A	Lab Control Sample Dup	51	51	40	44	50	62	52	57

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152230/2-A	Lab Control Sample	63	59	66	54	66	63	55
LCSD 320-152230/3-A	Lab Control Sample Dup	53	46	52	41	47	50	38

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177396-2

Client Project/Site: Routine Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 9:35:24 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 9:35:24 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177396-1	Outfall001_20170218_Comp	Water	02/18/17 10:40	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Job ID: 440-177396-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177396-2

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.7° C, 1.0° C and 1.9° C.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall001_20170218_Comp (440-177396-1)

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

The following sample was prepped at a reduced aliquot due to sediment.

Outfall001_20170218_Comp (440-177396-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	5.89		1.68	1.81	3.00	1.65	pCi/L	03/16/17 09:14	03/19/17 20:28	1
Gross Beta	7.17		1.08	1.30	4.00	1.05	pCi/L	03/16/17 09:14	03/19/17 20:28	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	4.80	U	8.94	8.95	20.0	15.2	pCi/L	02/23/17 14:59	02/24/17 14:04	1
Potassium-40	54.2	U	96.2	96.4		158	pCi/L	02/23/17 14:59	02/24/17 14:04	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.199		0.103	0.104	1.00	0.124	pCi/L	02/23/17 09:25	03/17/17 05:43	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	87.9		40 - 110					02/23/17 09:25	03/17/17 05:43	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.286	U	0.297	0.298	1.00	0.485	pCi/L	02/23/17 10:05	03/09/17 11:22	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	87.9		40 - 110					02/23/17 10:05	03/09/17 11:22	1
<i>Y Carrier</i>	89.3		40 - 110					02/23/17 10:05	03/09/17 11:22	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.380	U	0.427	0.428	3.00	0.702	pCi/L	03/03/17 14:30	03/13/17 10:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	70.5		40 - 110					03/03/17 14:30	03/13/17 10:32	1
<i>Y Carrier</i>	98.3		40 - 110					03/03/17 14:30	03/13/17 10:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	12.2	U	168	168	500	305	pCi/L	03/17/17 10:22	03/17/17 18:41	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.575		0.291	0.293	1.00	0.227	pCi/L	03/09/17 12:44	03/17/17 19:12	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.3		30 - 110					03/09/17 12:44	03/17/17 19:12	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/16/17 09:14	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:28	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294388	02/24/17 14:04	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	294225	02/23/17 09:25	PJM	TAL SL
Total/NA	Analysis	903.0		1			298072	03/17/17 05:43	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	294240	02/23/17 10:05	PJM	TAL SL
Total/NA	Analysis	904.0		1			296684	03/09/17 11:22	RTM	TAL SL
Total/NA	Prep	PrecSep-7			499.95 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:32	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.0 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 18:41	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.29 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298368	03/17/17 19:12	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294225/1-A
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294225

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04263	U	0.0791	0.0792	1.00	0.140	pCi/L	02/23/17 09:25	03/17/17 05:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110					02/23/17 09:25	03/17/17 05:43	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294225/2-A
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.70		1.14	1.00	0.114	pCi/L	94	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	94.4		40 - 110							

Lab Sample ID: 440-177394-A-1-B MS
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0776	U	11.4	10.53		1.12	1.00	0.125	pCi/L	93	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	88.2		40 - 110								

Lab Sample ID: 440-177394-A-1-C MSD
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0776	U	11.4	10.66		1.14	1.00	0.114	pCi/L	94	75 - 138	0.06	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	85.8		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294240/1-A
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294240

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.4979		0.304	0.307	1.00	0.470	pCi/L	02/23/17 10:05	03/09/17 11:22	1
Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	92.6		40 - 110	02/23/17 10:05	03/09/17 11:22	1				
Y Carrier	87.9		40 - 110	02/23/17 10:05	03/09/17 11:22	1				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-294240/2-A
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-228	13.7	15.31		1.64	1.00	0.440	pCi/L	111	56 - 140	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	94.4		40 - 110							
Y Carrier	88.6		40 - 110							

Lab Sample ID: 440-177394-A-1-E MS
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.426		13.7	15.90		1.71	1.00	0.420	pCi/L	113	45 - 150
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	88.2		40 - 110								
Y Carrier	87.1		40 - 110								

Lab Sample ID: 440-177394-A-1-F MSD
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
Radium-228	0.426		13.7	15.82		1.73	1.00	0.520	pCi/L	112	45 - 150	0.03	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	85.8		40 - 110										
Y Carrier	84.5		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1
Carrier	%Yield	MB Qualifier	Limits							
Sr Carrier	77.8		40 - 110							
Y Carrier	97.2		40 - 110							
								Prepared	Analyzed	Dil Fac
								03/03/17 14:30	03/13/17 10:31	1
								03/03/17 14:30	03/13/17 10:31	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	80.3		40 - 110								
Y Carrier	104		40 - 110								

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.2		30 - 110					03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	89.4		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual						Limits	Limits	
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146		
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143		
		<i>MS MS</i>											
Tracer	%Yield	Qualifier	Limits										
Uranium-232	63.1		30 - 110										

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146		0.83	1
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143		0.71	1
		<i>MSD MSD</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	81.8		30 - 110											

Lab Sample ID: 440-178167-M-1-G MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual						Limits	Limits	
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146		
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143		
		<i>MS MS</i>											
Tracer	%Yield	Qualifier	Limits										
Uranium-232	74.3		30 - 110										

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146		0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143		0.42	1
		<i>MSD MSD</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	89.0		30 - 110											

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Rad

Prep Batch: 294225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294225/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294225/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-177394-A-1-B MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-177394-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 294240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294240/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294240/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-177394-A-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-177394-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Rad (Continued)

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM



440-177396 Chain of Custody

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 001 Comp		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245), (SVOCs E625) 2,4,6 TCF, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP alpha-BHC (E609) Armonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Perchlorate (E300) CF, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Surfactants (MIBAS) (SM540C/E425.1) BOD5 (20 degrees C) (E405.1 (SM5210B BODCalc)) TCDD (and all congeners) (E1613B) Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se										Comments 48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.	
Test America Contact: Urvashti Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se	Surfactants (MIBAS) (SM540C/E425.1)	Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Armonia-N (350.2)	alpha-BHC (E609)	2,4,6 TCF, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245)	Comments
Test America's services under this CoC shall be performed in accordance with the TACS within Blarney Service Agreement 2015-16-17 furnished by and between Halley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se	Surfactants (MIBAS) (SM540C/E425.1)	Perchlorate (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Armonia-N (350.2)	alpha-BHC (E609)	2,4,6 TCF, 2,4 Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245)	Comments
Sample Description: Outfall001_20170218_Comp		Sampling Date/Time: 2/18/2017/10:40		Container Type: 500 mL Poly		# of Cont: 1		Preservative: HNO3		Bottle #: 90		MS/MSD: No		Comments:	
Sample Description: Outfall002_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/10:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 110		MS/MSD: No		Comments:	
Sample Description: Outfall003_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 120		MS/MSD: No		Comments:	
Sample Description: Outfall004_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 130		MS/MSD: No		Comments:	
Sample Description: Outfall005_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall006_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall007_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall008_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: H2SO4		Bottle #: 160		MS/MSD: No		Comments:	
Sample Description: Outfall009_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall010_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall011_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 110		MS/MSD: No		Comments:	
Sample Description: Outfall012_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 120		MS/MSD: No		Comments:	
Sample Description: Outfall013_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 130		MS/MSD: No		Comments:	
Sample Description: Outfall014_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall015_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall016_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall017_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: HNO3		Bottle #: 315		MS/MSD: No		Comments:	
Sample Description: Outfall018_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 110		MS/MSD: No		Comments:	
Sample Description: Outfall019_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 120		MS/MSD: No		Comments:	
Sample Description: Outfall020_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 130		MS/MSD: No		Comments:	
Sample Description: Outfall021_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall022_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall023_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall024_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: H2SO4		Bottle #: 160		MS/MSD: No		Comments:	
Sample Description: Outfall025_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall026_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall027_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall028_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: HNO3		Bottle #: 315		MS/MSD: No		Comments:	
Sample Description: Outfall029_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 110		MS/MSD: No		Comments:	
Sample Description: Outfall030_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 120		MS/MSD: No		Comments:	
Sample Description: Outfall031_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 130		MS/MSD: No		Comments:	
Sample Description: Outfall032_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall033_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall034_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall035_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: H2SO4		Bottle #: 160		MS/MSD: No		Comments:	
Sample Description: Outfall036_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall037_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall038_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall039_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: HNO3		Bottle #: 315		MS/MSD: No		Comments:	
Sample Description: Outfall040_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 110		MS/MSD: No		Comments:	
Sample Description: Outfall041_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 120		MS/MSD: No		Comments:	
Sample Description: Outfall042_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 130		MS/MSD: No		Comments:	
Sample Description: Outfall043_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall044_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall045_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall046_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: H2SO4		Bottle #: 160		MS/MSD: No		Comments:	
Sample Description: Outfall047_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall048_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall049_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall050_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: HNO3		Bottle #: 315		MS/MSD: No		Comments:	
Sample Description: Outfall051_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 110		MS/MSD: No		Comments:	
Sample Description: Outfall052_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 120		MS/MSD: No		Comments:	
Sample Description: Outfall053_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: None		Bottle #: 130		MS/MSD: No		Comments:	
Sample Description: Outfall054_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 170		MS/MSD: No		Comments:	
Sample Description: Outfall055_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Glass Amber		# of Cont: 2		Preservative: None		Bottle #: 180		MS/MSD: No		Comments:	
Sample Description: Outfall056_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 1L Poly		# of Cont: 1		Preservative: None		Bottle #: 185		MS/MSD: No		Comments:	
Sample Description: Outfall057_20170218_Comp_Extra		Sampling Date/Time: 2/19/2017/18:40		Container Type: 500 mL Poly		# of Cont: 2		Preservative: H2SO4		Bottle #: 160		MS/MSD: No		Comments:	
Sample Description: Outfall058_20170218_C															

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177396-2

Login Number: 177396

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177396-2

Login Number: 177396

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/21/17 01:16 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)		
440-177394-A-1-B MS	Matrix Spike	88.2		
440-177394-A-1-C MSD	Matrix Spike Duplicate	85.8		
440-177396-1	Outfall001_20170218_Comp	87.9		
LCS 160-294225/2-A	Lab Control Sample	94.4		
MB 160-294225/1-A	Method Blank	92.6		

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)		
440-177394-A-1-E MS	Matrix Spike	88.2	87.1		
440-177394-A-1-F MSD	Matrix Spike Duplicate	85.8	84.5		
440-177396-1	Outfall001_20170218_Comp	87.9	89.3		
LCS 160-294240/2-A	Lab Control Sample	94.4	88.6		
MB 160-294240/1-A	Method Blank	92.6	87.9		

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)		
440-177394-A-1-I MS	Matrix Spike	80.3	104		
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2		
440-177396-1	Outfall001_20170218_Comp	70.5	98.3		
LCS 160-295967/2-A	Lab Control Sample	88.0	100		
MB 160-295967/1-A	Method Blank	77.8	97.2		

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)		
440-177394-A-1-L MS	Matrix Spike	63.1		
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8		
440-177396-1	Outfall001_20170218_Comp	66.3		

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177396-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 14, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177396-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall001_20170218_ Comp	440-177396-1	N/A	Water	2/18/17 10:40 AM	E200.8
Outfall001_20170218_ Comp_F	440-177396-3	N/A	Water	2/18/17 10:40 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177396-4:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklist, custody seals were intact on the coolers.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 200.8— ZINC

Michael Cherny of MEC^X reviewed the SDG on April 14, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall001_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis five days after receipt. Dissolved zinc in the sample was qualified as an estimated nondetect (UJ).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for zinc were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with analysis of total zinc; this review is based on summary data for that CRQL.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blank. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total zinc; this review is based on summary data for those blanks.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total zinc; this review is based on summary data only for this ICSA analysis.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.



III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773964

Analysis Method E200.8

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	24	20	10	ug/L			

Sample Name Outfall001_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177396-4

Client Project/Site: Routine Outfall 001 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/14/2017 9:23:43 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/14/2017 9:23:43 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177396-1	Outfall001_20170218_Comp	Water	02/18/17 10:40	02/18/17 18:40
440-177396-3	Outfall001_20170218_Comp_F	Water	02/18/17 10:40	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Job ID: 440-177396-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177396-4**

Comments

200.7 metals reported by 200.8 method with 200.7 RLs.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.7° C, 1.0° C and 1.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall001_20170218_Comp_Extra (440-177396-2). received #2 not listed on coc.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	24		20	10	ug/L		03/01/17 15:15	03/03/17 14:54	1

Client Sample ID: Outfall001_20170218_Comp_F

Lab Sample ID: 440-177396-3

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		02/23/17 15:59	02/27/17 15:32	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Client Sample ID: Outfall001_20170218_Comp

Lab Sample ID: 440-177396-1

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:54	IH1	TAL IRV

Client Sample ID: Outfall001_20170218_Comp_F

Lab Sample ID: 440-177396-3

Date Collected: 02/18/17 10:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 15:32	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	74.6		ug/L		93	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	14	J,DX	80.0	89.7		ug/L		95	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	14	J,DX	80.0	89.3		ug/L		94	70 - 130	0	20

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/23/17 15:59	02/27/17 14:41	1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	76.8		ug/L		96	85 - 115

Lab Sample ID: 440-177395-A-3-C MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	ND	QP	80.0	81.7		ug/L		102	70 - 130

Lab Sample ID: 440-177395-A-3-D MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	ND	QP	80.0	85.0		ug/L		106	70 - 130	4	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

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QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.2	389636
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	389636

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-3	Outfall001_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.8	390172
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390172

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-1	Outfall001_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 001 Comp

TestAmerica Job ID: 440-177396-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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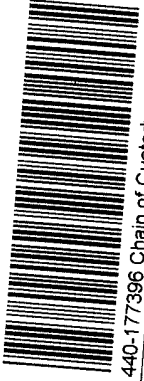
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CHAIN OF CUSTODY FORM



440-177396 Chain of Custody

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 001 Comp		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245), (SVOCs E625) 2,4,6 TCP, 2,4 Dinitrotoluene, Bis(2- ethylhexyl)phthalate, NDMA, PCP alpha-BHC (E609) Armonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Perchlorate (E300) Cl ₂ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Surfactants (MBAS) (SM540C/E425.1) BOD ₅ (20 degrees C) (E405.1 (SM5210B BODCalc)) TCDD (and all congeners) (E1613B)	
Test America Contact: Urvashti Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Total Recoverable Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se	
Test America's services under this CoC shall be performed in accordance with the TACS within Blarriet Service Agreement 2015-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-122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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177396-4

Login Number: 177396

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174173-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 1 – Sample Identification
- 2 – Data Qualifier Reference
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I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174173-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170120_ Grab	440-174173-1	N/A	Water	1/20/17 12:00 PM	E120.1, E1664, E624, SM2540F, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174173-1:

- The laboratory received the sample in this SDG on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issues were noted:

- In addition to the analyses addressed in this report, the COC included requests for methods SM9221F and 8015D/V; however, these analyses were cancelled by the client.
- Analysis for Human Bacteroides was subcontracted to Source Molecular laboratory. The subcontract laboratory reported the incorrect sample number for this analysis (incorrect number: Outfall002_20170102_Grab).



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met, with one exception. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits, with the exception of the %D of 42.0% for trichlorofluoromethane. The nondetect result for trichlorofluoromethane was qualified as estimated (UJ).

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170120_Grab. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170120 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Results reported between the MDL and the reporting limit were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit; however, the sample in this SDG had no reported detects. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 22, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA methods 1664A and 120.1*, *SAM348-357* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The subcontract laboratory received the sample for Human Bacteroides analysis after the holding time requirement (24-48 hours); therefore, the result for this analysis was qualified as estimated (UJ). The analytical holding time for the remaining analyses, as noted below, were met.

- 28 days for HEM; oil and grease
- 28 days for specific conductance
- 7 days for settleable solids



IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

It should be noted that no sample raw data was presented in the SDG for specific conductance analysis; no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401741731

Analysis Method E120.1

Sample Name Outfall002_20170120_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174173-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	130	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall002_20170120_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174173-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.4	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall002_20170120_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174173-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	ND	2.0	1.0	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	

Analysis Method E624

Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U
Cyclohexane	N	110-82-7	ND	2.0	1.0	ug/L	U	U
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U
m,p-Xylenes	N	179601-23-1	ND	1.0	0.50	ug/L	U	U
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
o-Xylene	N	95-47-6	ND	0.50	0.25	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	UJ C
Trifluorotrchloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SAM348-357

Sample Name	Outfall002_20170120_Grab		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/20/2017 12:00:00 PM		Validation Level:	8					
Lab Sample Name:	440-174173-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	absent			CEs/100	U	UJ	H

Analysis Method SM2540F

Sample Name	Outfall002_20170120_Grab		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/20/2017 12:00:00 PM		Validation Level:	8					
Lab Sample Name:	440-174173-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	0.50	0.10	0.10	ml/l/hr			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174173-1

Client Project/Site: Annual Outfall 002 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/3/2017 9:06:54 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/3/2017 9:06:54 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174173-1	Outfall002_20170120_Grab	Water	01/20/17 12:00	01/20/17 18:22
440-174173-3	TB-20170120	Water	01/20/17 12:00	01/20/17 18:22

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Job ID: 440-174173-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174173-1

Comments

Some analysis were canceled by cleint. See attached email.

Receipt

The samples were received on 1/20/2017 6:22 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.4° C, 1.7° C and 5.4° C.

GC/MS VOA

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-383982 recovered above the upper control limit for Trichlorofluoromethane. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following sample is impacted: TB-20170120 (440-174173-3) and (CCVIS 440-383982/4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385703 and analytical batch 440-385937. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Client Sample ID: Outfall002_20170120_Grab

Lab Sample ID: 440-174173-1

Date Collected: 01/20/17 12:00

Matrix: Water

Date Received: 01/20/17 18:22

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/24/17 12:05	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 12:05	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/24/17 12:05	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 12:05	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 12:05	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Cyclohexane	ND		2.0	1.0	ug/L			01/24/17 12:05	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/24/17 12:05	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 12:05	1
o-Xylene	ND		0.50	0.25	ug/L			01/24/17 12:05	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 12:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		80 - 120		01/24/17 12:05	1
Dibromofluoromethane (Surr)	106		76 - 132		01/24/17 12:05	1
Toluene-d8 (Surr)	105		80 - 128		01/24/17 12:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.4	1.5	mg/L		02/01/17 08:05	02/02/17 02:21	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	130		1.0	1.0	umhos/cm			01/24/17 08:28	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Client Sample ID: Outfall002_20170120_Grab

Lab Sample ID: 440-174173-1

Date Collected: 01/20/17 12:00

Matrix: Water

Date Received: 01/20/17 18:22

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Settleable Solids	0.50		0.10	0.10	mL/L/Hr			01/21/17 11:53	1

Client Sample ID: TB-20170120

Lab Sample ID: 440-174173-3

Date Collected: 01/20/17 12:00

Matrix: Water

Date Received: 01/20/17 18:22

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/24/17 13:35	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 13:35	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/24/17 13:35	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 13:35	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 13:35	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Cyclohexane	ND		2.0	1.0	ug/L			01/24/17 13:35	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/24/17 13:35	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 13:35	1
o-Xylene	ND		0.50	0.25	ug/L			01/24/17 13:35	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 13:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120		01/24/17 13:35	1
Dibromofluoromethane (Surr)	104		76 - 132		01/24/17 13:35	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Client Sample ID: TB-20170120

Date Collected: 01/20/17 12:00

Date Received: 01/20/17 18:22

Lab Sample ID: 440-174173-3

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	<i>104</i>		<i>80 - 128</i>		<i>01/24/17 13:35</i>	<i>1</i>

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Client Sample ID: Outfall002_20170120_Grab

Lab Sample ID: 440-174173-1

Date Collected: 01/20/17 12:00

Matrix: Water

Date Received: 01/20/17 18:22

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383982	01/24/17 12:05	AYL	TAL IRV
Total/NA	Analysis	120.1		1			384000	01/24/17 08:28	XL	TAL IRV
Total/NA	Prep	1664A			925 mL	1000 mL	385703	02/01/17 08:05	L2A	TAL IRV
Total/NA	Analysis	1664A		1			385937	02/02/17 02:21	BAW	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	383617	01/21/17 11:53	RB	TAL IRV

Client Sample ID: TB-20170120

Lab Sample ID: 440-174173-3

Date Collected: 01/20/17 12:00

Matrix: Water

Date Received: 01/20/17 18:22

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383982	01/24/17 13:35	AYL	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383982/5
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/24/17 09:04	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 09:04	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/24/17 09:04	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 09:04	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 09:04	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Cyclohexane	ND		2.0	1.0	ug/L			01/24/17 09:04	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/24/17 09:04	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 09:04	1
o-Xylene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 09:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120		01/24/17 09:04	1
Dibromofluoromethane (Surr)	106		76 - 132		01/24/17 09:04	1
Toluene-d8 (Surr)	105		80 - 128		01/24/17 09:04	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-383982/6

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	26.4		ug/L		105	70 - 130
1,1,1,2-Tetrachloroethane	25.0	24.5		ug/L		98	63 - 130
1,1,2-Trichloroethane	25.0	27.6		ug/L		110	70 - 130
1,1-Dichloroethane	25.0	25.9		ug/L		104	64 - 130
1,1-Dichloroethene	25.0	24.5		ug/L		98	70 - 130
1,2-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
1,2-Dichloroethane	25.0	26.4		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	25.6		ug/L		102	67 - 130
1,3-Dichlorobenzene	25.0	26.1		ug/L		104	70 - 130
1,4-Dichlorobenzene	25.0	23.9		ug/L		96	70 - 130
Benzene	25.0	25.0		ug/L		100	68 - 130
Bromoform	25.0	27.5		ug/L		110	60 - 148
Bromomethane	25.0	23.1		ug/L		92	64 - 139
Carbon tetrachloride	25.0	26.8		ug/L		107	60 - 150
Chlorobenzene	25.0	24.7		ug/L		99	70 - 130
Dibromochloromethane	25.0	27.5		ug/L		110	69 - 145
Chloroethane	25.0	23.4		ug/L		94	64 - 135
Chloroform	25.0	26.1		ug/L		104	70 - 130
Chloromethane	25.0	24.7		ug/L		99	47 - 140
cis-1,3-Dichloropropene	25.0	26.5		ug/L		106	70 - 133
Bromodichloromethane	25.0	26.9		ug/L		108	70 - 132
Ethylbenzene	25.0	24.8		ug/L		99	70 - 130
Methylene Chloride	25.0	24.6		ug/L		99	52 - 130
Tetrachloroethene	25.0	26.2		ug/L		105	70 - 130
Toluene	25.0	24.9		ug/L		100	70 - 130
trans-1,2-Dichloroethene	25.0	26.1		ug/L		104	70 - 130
trans-1,3-Dichloropropene	25.0	25.9		ug/L		103	70 - 132
Trichlorofluoromethane	25.0	26.8		ug/L		107	60 - 150
Vinyl chloride	25.0	22.0		ug/L		88	59 - 133
Trichloroethene	25.0	27.5		ug/L		110	70 - 130
cis-1,2-Dichloroethene	25.0	26.8		ug/L		107	70 - 133
m,p-Xylene	25.0	25.8		ug/L		103	70 - 130
Naphthalene	25.0	26.5		ug/L		106	60 - 140
o-Xylene	25.0	26.3		ug/L		105	70 - 130
Xylenes, Total	50.0	52.1		ug/L		104	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	102		80 - 128

Lab Sample ID: 440-174173-1 MS

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Outfall002_20170120_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	25.8		ug/L		103	70 - 130
1,1,1,2-Tetrachloroethane	ND		25.0	24.9		ug/L		100	63 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174173-1 MS

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Outfall002_20170120_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,2-Trichloroethane	ND		25.0	27.5		ug/L		110	70 - 130
1,1-Dichloroethane	ND		25.0	26.1		ug/L		104	65 - 130
1,1-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130
1,2-Dichlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130
1,2-Dichloroethane	ND		25.0	26.0		ug/L		104	56 - 146
1,2-Dichloropropane	ND		25.0	25.3		ug/L		101	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.2		ug/L		109	70 - 130
1,4-Dichlorobenzene	ND		25.0	24.9		ug/L		100	70 - 130
Benzene	ND		25.0	24.6		ug/L		99	66 - 130
Bromoform	ND		25.0	27.2		ug/L		109	59 - 150
Bromomethane	ND		25.0	20.0		ug/L		80	62 - 131
Carbon tetrachloride	ND		25.0	26.7		ug/L		107	60 - 150
Chlorobenzene	ND		25.0	24.9		ug/L		100	70 - 130
Dibromochloromethane	ND		25.0	26.7		ug/L		107	70 - 148
Chloroethane	ND		25.0	22.0		ug/L		88	68 - 130
Chloroform	ND		25.0	25.8		ug/L		103	70 - 130
Chloromethane	ND		25.0	26.4		ug/L		106	39 - 144
cis-1,3-Dichloropropene	ND		25.0	25.9		ug/L		104	70 - 133
Bromodichloromethane	ND		25.0	26.8		ug/L		107	70 - 138
Ethylbenzene	ND		25.0	24.9		ug/L		100	70 - 130
Methylene Chloride	ND		25.0	26.0		ug/L		104	52 - 130
Tetrachloroethene	ND		25.0	25.9		ug/L		104	70 - 137
Toluene	ND		25.0	24.8		ug/L		99	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
trans-1,3-Dichloropropene	ND		25.0	26.0		ug/L		104	70 - 138
Trichlorofluoromethane	ND		25.0	31.6		ug/L		126	60 - 150
Vinyl chloride	ND		25.0	22.5		ug/L		90	50 - 137
Trichloroethene	ND		25.0	27.1		ug/L		108	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
m,p-Xylene	ND		25.0	25.8		ug/L		103	70 - 133
Naphthalene	ND		25.0	27.1		ug/L		108	60 - 140
o-Xylene	ND		25.0	26.3		ug/L		105	70 - 133
Xylenes, Total	ND		50.0	52.1		ug/L		104	70 - 133

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	100		80 - 128

Lab Sample ID: 440-174173-1 MSD

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Outfall002_20170120_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.5		ug/L		102	70 - 130	1	20
1,1,1,2-Tetrachloroethane	ND		25.0	24.5		ug/L		98	63 - 130	2	30
1,1,2-Trichloroethane	ND		25.0	27.4		ug/L		110	70 - 130	0	25
1,1-Dichloroethane	ND		25.0	24.9		ug/L		100	65 - 130	5	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174173-1 MSD
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Outfall002_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	ND		25.0	23.7		ug/L		95	70 - 130	9	20
1,2-Dichlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130	4	20
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	25.0		ug/L		100	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	25.7		ug/L		103	70 - 130	6	20
1,4-Dichlorobenzene	ND		25.0	23.8		ug/L		95	70 - 130	4	20
Benzene	ND		25.0	24.2		ug/L		97	66 - 130	2	20
Bromoform	ND		25.0	27.4		ug/L		110	59 - 150	1	25
Bromomethane	ND		25.0	20.4		ug/L		81	62 - 131	2	25
Carbon tetrachloride	ND		25.0	25.9		ug/L		104	60 - 150	3	25
Chlorobenzene	ND		25.0	24.5		ug/L		98	70 - 130	1	20
Dibromochloromethane	ND		25.0	26.5		ug/L		106	70 - 148	1	25
Chloroethane	ND		25.0	22.0		ug/L		88	68 - 130	0	25
Chloroform	ND		25.0	25.6		ug/L		102	70 - 130	1	20
Chloromethane	ND		25.0	25.5		ug/L		102	39 - 144	3	25
cis-1,3-Dichloropropene	ND		25.0	25.4		ug/L		101	70 - 133	2	20
Bromodichloromethane	ND		25.0	26.2		ug/L		105	70 - 138	3	20
Ethylbenzene	ND		25.0	24.1		ug/L		96	70 - 130	3	20
Methylene Chloride	ND		25.0	24.4		ug/L		98	52 - 130	6	20
Tetrachloroethene	ND		25.0	25.7		ug/L		103	70 - 137	1	20
Toluene	ND		25.0	23.9		ug/L		95	70 - 130	4	20
trans-1,2-Dichloroethene	ND		25.0	26.0		ug/L		104	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	25.0		ug/L		100	70 - 138	4	25
Trichlorofluoromethane	ND		25.0	26.0		ug/L		104	60 - 150	19	25
Vinyl chloride	ND		25.0	22.5		ug/L		90	50 - 137	0	30
Trichloroethene	ND		25.0	26.3		ug/L		105	70 - 130	3	20
cis-1,2-Dichloroethene	ND		25.0	26.1		ug/L		104	70 - 130	1	20
m,p-Xylene	ND		25.0	24.5		ug/L		98	70 - 133	5	25
Naphthalene	ND		25.0	26.7		ug/L		107	60 - 140	2	30
o-Xylene	ND		25.0	25.6		ug/L		102	70 - 133	3	20
Xylenes, Total	ND		50.0	50.1		ug/L		100	70 - 133	4	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-384000/3
Matrix: Water
Analysis Batch: 384000

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			01/24/17 08:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-384000/4
Matrix: Water
Analysis Batch: 384000

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	768		umhos/cm		100	90 - 110

Lab Sample ID: 720-77155-C-5 DU
Matrix: Water
Analysis Batch: 384000

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	95		92.8		umhos/cm		2	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-385703/1-A
Matrix: Water
Analysis Batch: 385937

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385703

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/01/17 08:05	02/02/17 02:21	1

Lab Sample ID: LCS 440-385703/2-A
Matrix: Water
Analysis Batch: 385937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385703

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.4		mg/L		89	78 - 114

Lab Sample ID: LCSD 440-385703/3-A
Matrix: Water
Analysis Batch: 385937

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385703

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	37.4		mg/L		93	78 - 114	5	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

GC/MS VOA

Analysis Batch: 383982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174173-1	Outfall002_20170120_Grab	Total/NA	Water	624	
440-174173-3	TB-20170120	Total/NA	Water	624	
MB 440-383982/5	Method Blank	Total/NA	Water	624	
LCS 440-383982/6	Lab Control Sample	Total/NA	Water	624	
440-174173-1 MS	Outfall002_20170120_Grab	Total/NA	Water	624	
440-174173-1 MSD	Outfall002_20170120_Grab	Total/NA	Water	624	

General Chemistry

Analysis Batch: 383617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174173-1	Outfall002_20170120_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 384000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174173-1	Outfall002_20170120_Grab	Total/NA	Water	120.1	
MB 440-384000/3	Method Blank	Total/NA	Water	120.1	
LCS 440-384000/4	Lab Control Sample	Total/NA	Water	120.1	
720-77155-C-5 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 385703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174173-1	Outfall002_20170120_Grab	Total/NA	Water	1664A	
MB 440-385703/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-385703/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-385703/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 385937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174173-1	Outfall002_20170120_Grab	Total/NA	Water	1664A	385703
MB 440-385703/1-A	Method Blank	Total/NA	Water	1664A	385703
LCS 440-385703/2-A	Lab Control Sample	Total/NA	Water	1664A	385703
LCSD 440-385703/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	385703

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174173-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>
Sent: Friday, January 20, 2017 6:00 PM
To: Patel, Urvashi
Subject: RE: annual outfall 002 1/20/17

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

Just the annual. Keep the methods in black.

A A R R R R/Q/A A A A

ANALYSIS REQUIRED									
MST-Bacterioidales, Human (SAM348-357)									
E. coli (SM9221)									
Settleable Solids (E160.5 (SM2540F))									
Conductivity (SM2510B / E120.1)									
Oil & Grease (E1664A-HEM)									
VOCs + VOCs PP + xylenes, Freon 11, Freon 113, Freon 123A, Cyclohexane, cis-1,2-DCE (E624)									
VOCs - only A+A+2CVE (E624)									
TPH: gas (GRO(C4-C12)) (SW8015B)									
TPH: diesel/jet fuel (DRO (C13-C28)) (SW8015B)									

Katherine Miller
HALEY & ALDRICH
 Tel: 520.289.8606

From: Patel, Urvashi [<mailto:Urvashi.Patel@testamericainc.com>]
Sent: Friday, January 20, 2017 6:55 PM
To: Miller, Katherine <KMiller@haleyaldrich.com>
Subject: annual outfall 002 1/20/17

Hi Katherine

Per our phone conversation today, I will cancel the Grab for outfall 002, collected today. I will cancel all analytical once I receive a copy from the lab.

Thank You,

URVASHI PATEL

Manager of Project Management

Test America

THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Ave, Suite #100

Irvine, CA 92614

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DIRECT 949-260-3269

CELL 949-333-9055

www.testamericainc.com

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: [Project Feedback](#)

Please check with your PM before submitting short hold samples after 5pm or on Saturday.

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CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [001, 002, 011, 018] Outfall 002 Grab</p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)</p>		<p>Field Readings (Include units) Time of Readings: 11:40</p>		<p>Meter serial #</p>	
<p>Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-280-3269 Cell 949-333-9055</p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)</p>		<p>Field readings QC Checked by: <i>[Signature]</i> Date/Time: 12-17-14</p>		<p>DO 9.30 mg/L pH 6.77 pH unit Temp 9.53 °F</p>		<p>TRC 0.03 mg/L</p>	
<p>Sampler: Daniel Ear</p>		<p>Field Manager: Mark Dominick 818.350.7312, 616.599.0702 (cell)</p>		<p>ANALYSIS REQUIRED</p>		<p>Field Readings</p>		<p>Comments</p>	
<p>Sample Description</p>		<p>Sample Matrix</p>		<p>Container Type</p>		<p>Preservative</p>		<p>Bottle #</p>	
<p>Outfall 002</p>		<p>WM</p>		<p>125mL Sterile Poly</p>		<p>None</p>		<p>5</p>	
<p>Outfall 002, 20170120_Grab</p>		<p>WM</p>		<p>1 L Poly</p>		<p>None</p>		<p>5</p>	
<p>Outfall 002, 20170120_Grab_Extra</p>		<p>WM</p>		<p>125mL Sterile Poly</p>		<p>Na2S2O3</p>		<p>10</p>	
<p>Trip Blanks TB-20170120</p>		<p>WM</p>		<p>1 L Glass Amber</p>		<p>HCl</p>		<p>15</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>HCl</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>HCl</p>		<p>60</p>	
		<p>WM</p>		<p>1 L Glass Amber</p>		<p>None</p>		<p>65</p>	
		<p>WM</p>		<p>1 L Poly</p>		<p>None</p>		<p>70</p>	
		<p>WM</p>		<p>500 mL Poly</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>1 L Glass Amber</p>		<p>HCl</p>		<p>15</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>HCl</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>500 mL Poly</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>HCl</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>45</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>55</p>	
		<p>WM</p>		<p>40 mL VOA</p>		<p>None</p>		<p>75</p>	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174173-1

Login Number: 174173

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174235-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174235-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170121_Comp	440-174235-1	N/A	Water	1/21/17 2:00 PM	E1613B, E180.1, E200.7, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall002_20170121_Comp_F	440-174235-3	N/A	Water	1/21/17 2:00 PM	E200.7, E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174235-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine and TA-Denver.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.

The following issue was noted:

- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD above the reporting limit was within 10 \times the method blank concentration and was therefore also qualified as a nondetect (U). The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample OUTFALL002_20170121_COMP. The result for total HPCDD was



qualified as nondetected (U). The reviewer verified that peaks comprising total HpCDF in the sample included more peaks than the method blank total. The sample result for total HpCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Reported EMPCs for isomers 1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, and 2,3,4,7,8-PeCDF were qualified as estimated nondetects (UJ). Totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.7, 200.8, AND 245.1— METALS AND MERCURY

Kathryn Okonzak-Lowry of MEC^x reviewed the SDG on March 27, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8, and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall002_20170121_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 10 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries were within the method control limits of 85-115%. The LCS/LCSD RPDs were within the method control limit of $\leq 20\%$.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170121_Comp for ICP and ICP/MS analytes and Outfall002_20170121_Comp_F for the ICP/MS analytes and mercury. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

E. Wessling of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.



V.3.2. LABORATORY CONTROL SAMPLES

Recovery of alpha BHC was within the laboratory control limits.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy based on the LCS results.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Marcia Hilchey of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.



VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.



Calibration criteria were met for applicable target compounds. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for four semivolatile target compounds by EPA Method 625: 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.



Due to limited sample volume provided, the extracted sample volume of 880 milliliters was less than the nominal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 180.1, 300.0 and 821-R-02-013*, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540C* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VIII.1. HOLDING TIMES

The sample for chronic toxicity was received at the subcontract lab past the 36 hour holding time requirement. The result for chronic toxicity was qualified as estimated (J). Turbidity was analyzed one hour and 55 minutes past the 48 hour holding time requirement. MBAS was analyzed 54 minutes past the 48 hour holding time requirement. Results for turbidity and MBAS were qualified as estimated (J). The ammonia method requires samples to be preserved to a pH of <2. The ammonia sample was received at the laboratory at a pH of 7 and was preserved to the appropriate pH at the laboratory. The ammonia result was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride and sulfate
- 48 hours for nitrate and nitrite
- 48 hours for Biological Oxygen Demand

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.



VIII.3.2. *LABORATORY CONTROL SAMPLES*

Laboratory control sample recoveries were within the laboratory control limits.

VIII.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were not performed on the sample in this SDG.

VIII.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were not performed on a sample in this SDG.

VIII.4. **SAMPLE RESULT VERIFICATION**

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VIII.5. **FIELD QC SAMPLES**

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401742351

Analysis Method E1613B

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.00011	0.00011	0.00000059	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00023	0.00023	0.00000081	ug/L	MB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000053	0.000053	0.00000036	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000053	0.000053	0.00000084	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.000053	0.000053	0.00000041	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.000053	0.000053	0.00000080	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.000053	0.000053	0.00000054	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000030	0.000053	0.00000076	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000035	0.000053	0.00000059	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000028	0.000053	0.00000057	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000031	0.000053	0.00000047	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000024	0.000053	0.00000055	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000025	0.000053	0.00000073	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.000053	0.000053	0.00000057	ug/L	J,DXq	UJ	*III
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.000053	0.000053	0.00000054	ug/L	J,DXq	UJ	*III
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000011	0.0000027	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000011	0.000011	0.00000040	ug/L	J,DXq	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000011	0.00000047	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000023	0.000053	0.00000038	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000053	0.000053	0.00000084	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000011	0.000053	0.00000068	ug/L	J,DXq	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000011	0.000053	0.00000053	ug/L	J,DXq	J	DNQ, *III

Friday, March 31, 2017

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000042	0.000053	0.00000055	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000025	0.000053	0.00000073	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000011	0.000011	0.00000040	ug/L	J,DXq	J	DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000011	0.00000047	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	200	4.0	1.6	NTU	BU	J	H

Analysis Method E200.7

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	0.031	0.020	0.010	mg/L			

Sample Name Outfall002_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	ND	0.020	0.010	mg/L	UQP	UJ	H

Analysis Method E200.8

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	7.2	2.0	0.50	ug/L			
Lead	T	7439-92-1	4.0	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Analysis Method E200.8**Sample Name** Outfall002_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.3	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1**Sample Name** Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall002_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	6.4	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	2.8	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	2.8	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	13	0.50	0.25	mg/L			

Analysis Method E314.0

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0053	0.0027	ug/L	U	U	

Analysis Method E625

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	6.82	0.568	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.68	2.27	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.68	2.27	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	5.68	1.14	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	5.68	1.14	ug/L	U	U	

Analysis Method SM2540C

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	280	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	110	13	6.3	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G**Sample Name** Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.333	0.200	0.100	mg/L		J	H

Analysis Method SM5210B**Sample Name** Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	BOD		2.6	2.0	0.50	mg/L			

Analysis Method SM5540**Sample Name** Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 2:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174235-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.063	0.10	0.050	mg/L	J,DXBU	J	DNQ, H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174235-1

Client Project/Site: Routine Outfalls 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/18/2017 11:07:56 PM

Urvashi Patel, Manager of Project Management

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/18/2017 11:07:56 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174235-1	Outfall002_20170121_Comp	Water	01/21/17 14:00	01/22/17 16:15
440-174235-3	Outfall002_20170121_Comp_F	Water	01/21/17 14:00	01/22/17 16:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Job ID: 440-174235-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174235-1

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 3.1° C, 3.4° C, 3.9° C and 4.4° C.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) 180.1: The following sample was analyzed outside of analytical holding time due to employee oversight.:
Outfall002_20170121_Comp (440-174235-1).

Method(s) SM 4500 NH3 G: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of 7. Outfall002_20170121_Comp (440-174235-1). The sample was preserved to the appropriate pH in the laboratory.

Method(s) SM 5540C: The following sample was analyzed outside of analytical holding time due to miscommunication with the lab:
Outfall002_20170121_Comp (440-174235-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 625: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 8270 LL 3520 preparation/analysis: Outfall002_20170121_Comp (440-174235-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.82	0.568	ug/L		01/25/17 13:07	01/28/17 13:53	1
Bis(2-ethylhexyl) phthalate	ND		5.68	2.27	ug/L		01/25/17 13:07	01/28/17 13:53	1
N-Nitrosodimethylamine	ND		5.68	1.14	ug/L		01/25/17 13:07	01/28/17 13:53	1
Pentachlorophenol	ND		5.68	1.14	ug/L		01/25/17 13:07	01/28/17 13:53	1
2,4-Dinitrotoluene	ND		5.68	2.27	ug/L		01/25/17 13:07	01/28/17 13:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	75		40 - 120	01/25/17 13:07	01/28/17 13:53	1
2-Fluorobiphenyl	73		50 - 120	01/25/17 13:07	01/28/17 13:53	1
2-Fluorophenol	67		30 - 120	01/25/17 13:07	01/28/17 13:53	1
Nitrobenzene-d5	77		45 - 120	01/25/17 13:07	01/28/17 13:53	1
Phenol-d6	74		35 - 120	01/25/17 13:07	01/28/17 13:53	1
Terphenyl-d14	43		37 - 144	01/25/17 13:07	01/28/17 13:53	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0053	0.0027	ug/L		01/23/17 07:27	01/23/17 20:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	73		10 - 150	01/23/17 07:27	01/23/17 20:59	1
DCB Decachlorobiphenyl (Surr)	70		18 - 134	01/23/17 07:27	01/23/17 20:59	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.4		0.50	0.25	mg/L			01/23/17 12:53	1
Nitrate as N	2.8		0.11	0.055	mg/L			01/23/17 12:53	1
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 12:53	1
Sulfate	13		0.50	0.25	mg/L			01/23/17 12:53	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 11:12	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.8		0.15	0.070	mg/L			01/31/17 13:31	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,7,8-PeCDD	0.0000025	J,DX	0.000053	0.0000007	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,7,8-PeCDF	0.0000024	J,DX	0.000053	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
2,3,4,7,8-PeCDF	0.0000018	J,DX q	0.000053	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,4,7,8-HxCDD	0.0000026	J,DX q	0.000053	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,6,7,8-HxCDD	0.0000035	J,DX	0.000053	0.0000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,7,8,9-HxCDD	0.0000031	J,DX	0.000053	0.0000004	ug/L		01/26/17 08:49	01/28/17 09:48	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.000024	J,DX q	0.000053	0.000008	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,6,7,8-HxCDF	0.000030	J,DX	0.000053	0.000007	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,7,8,9-HxCDF	0.000028	J,DX	0.000053	0.000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
2,3,4,6,7,8-HxCDF	0.000023	J,DX q	0.000053	0.000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,4,6,7,8-HpCDD	0.000024	J,DX MB	0.000053	0.000008	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,4,6,7,8-HpCDF	0.000095	J,DX MB	0.000053	0.000003	ug/L		01/26/17 08:49	01/28/17 09:48	1
1,2,3,4,7,8,9-HpCDF	0.000033	J,DX MB	0.000053	0.000004	ug/L		01/26/17 08:49	01/28/17 09:48	1
OCDD	0.00023	MB	0.00011	0.000008	ug/L		01/26/17 08:49	01/28/17 09:48	1
OCDF	0.000029	J,DX MB	0.00011	0.000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total TCDD	ND		0.000011	0.000004	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total TCDF	0.000011	J,DX q	0.000011	0.000004	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total PeCDD	0.000025	J,DX	0.000053	0.000007	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total PeCDF	0.000042	J,DX q	0.000053	0.000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total HxCDD	0.000011	J,DX q	0.000053	0.000005	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total HxCDF	0.000011	J,DX q	0.000053	0.000006	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total HpCDD	0.000045	J,DX MB	0.000053	0.000008	ug/L		01/26/17 08:49	01/28/17 09:48	1
Total HpCDF	0.000023	J,DX MB	0.000053	0.000003	ug/L		01/26/17 08:49	01/28/17 09:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	67		25 - 164	01/26/17 08:49	01/28/17 09:48	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,7,8-PeCDD	71		25 - 181	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,7,8-PeCDF	62		24 - 185	01/26/17 08:49	01/28/17 09:48	1
13C-2,3,4,7,8-PeCDF	69		21 - 178	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,6,7,8-HxCDD	66		28 - 130	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,4,7,8-HxCDF	60		26 - 152	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,6,7,8-HxCDF	56		26 - 123	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,7,8,9-HxCDF	56		29 - 147	01/26/17 08:49	01/28/17 09:48	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,4,6,7,8-HpCDD	69		23 - 140	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,4,6,7,8-HpCDF	60		28 - 143	01/26/17 08:49	01/28/17 09:48	1
13C-1,2,3,4,7,8,9-HpCDF	66		26 - 138	01/26/17 08:49	01/28/17 09:48	1
13C-OCDD	76		17 - 157	01/26/17 08:49	01/28/17 09:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/26/17 08:49	01/28/17 09:48	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000011	0.0000027	ug/L		01/26/17 08:49	01/30/17 17:49	1
Isotope Dilution									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	56		24 - 169				01/26/17 08:49	01/30/17 17:49	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl-2,3,7,8-TCDD	89		35 - 197				01/26/17 08:49	01/30/17 17:49	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	0.031		0.020	0.010	mg/L		01/27/17 14:54	01/30/17 17:52	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/27/17 14:56	01/31/17 12:17	1
Copper	7.2		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 12:17	1
Lead	4.0		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 12:17	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 12:17	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 22:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	200	BU	4.0	1.6	NTU			01/23/17 15:55	40
Total Dissolved Solids	280		10	5.0	mg/L			01/26/17 08:21	1
Total Suspended Solids	110		13	6.3	mg/L			01/26/17 18:10	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:17	1
Ammonia (as N)	0.333		0.200	0.100	mg/L			01/27/17 14:01	1
Methylene Blue Active Substances	0.063	J,DX BU	0.10	0.050	mg/L			01/23/17 14:54	1
Biochemical Oxygen Demand	2.6		2.0	0.50	mg/L			01/22/17 17:00	1

Client Sample ID: Outfall002_20170121_Comp_F

Lab Sample ID: 440-174235-3

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	0.020	0.010	mg/L		02/02/17 10:37	02/02/17 17:42	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/02/17 10:08	02/03/17 16:08	1
Copper	2.3	QP	2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:08	1
Lead	ND	QP	1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:08	1
Selenium	ND	QP	2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:08	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/01/17 23:48	02/02/17 20:54	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestrum	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			880 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			384955	01/28/17 13:53	DF	TAL IRV
Total/NA	Prep	608			940 mL	2 mL	383738	01/23/17 07:27	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			383608	01/23/17 20:59	KS	TAL IRV
Total/NA	Analysis	300.0		1			383773	01/23/17 12:53	NTN	TAL IRV
Total/NA	Analysis	300.0		1			383774	01/23/17 12:53	NTN	TAL IRV
Total/NA	Analysis	314.0		1			383992	01/24/17 11:12	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385504	01/31/17 13:31	NN	TAL IRV
Total/NA	Prep	1613B			947.9 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 09:48	SMA	TAL SAC
Total/NA	Prep	1613B	RA		947.9 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 17:49	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	384921	01/27/17 14:54	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			385338	01/30/17 17:52	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	384922	01/27/17 14:56	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			385495	01/31/17 12:17	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384111	01/24/17 14:19	DB	TAL IRV
Total/NA	Analysis	245.1		1			384220	01/24/17 22:07	DB	TAL IRV
Total/NA	Analysis	180.1		40			383844	01/23/17 15:55	ST	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384518	01/26/17 08:21	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	80 mL	1000 mL	384715	01/26/17 18:10	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	383875	01/23/17 14:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384201	01/24/17 19:17	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	384964	01/27/17 14:01	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	383876	01/23/17 14:54	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			383675	01/22/17 17:00	XL	TAL IRV

Client Sample ID: Outfall002_20170121_Comp_F

Lab Sample ID: 440-174235-3

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385801	02/01/17 14:42	Q1N	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	386042	02/02/17 10:37	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			386175	02/02/17 17:42	K1E	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385801	02/01/17 14:42	Q1N	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	386038	02/02/17 10:08	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386382	02/03/17 16:08	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385801	02/01/17 14:42	Q1N	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	385922	02/01/17 23:48	DB	TAL IRV
Dissolved	Analysis	245.1		1			386411	02/02/17 20:54	DB	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384349/1-A

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pentachlorophenol	ND		5.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	61		40 - 120	01/25/17 13:07	01/27/17 18:46	1
2-Fluorobiphenyl	76		50 - 120	01/25/17 13:07	01/27/17 18:46	1
2-Fluorophenol	63		30 - 120	01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene-d5	74		45 - 120	01/25/17 13:07	01/27/17 18:46	1
Phenol-d6	60		35 - 120	01/25/17 13:07	01/27/17 18:46	1
Terphenyl-d14	84		37 - 144	01/25/17 13:07	01/27/17 18:46	1

Lab Sample ID: LCS 440-384349/2-A

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	9.411		ug/L		94	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	9.786		ug/L		98	10 - 150
N-Nitrosodimethylamine	10.0	7.600		ug/L		76	26 - 117
Pentachlorophenol	20.0	17.38		ug/L		87	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	91		40 - 120
2-Fluorobiphenyl	84		50 - 120
2-Fluorophenol	74		30 - 120
Nitrobenzene-d5	83		45 - 120
Phenol-d6	81		35 - 120
Terphenyl-d14	94		37 - 144

Lab Sample ID: 440-174317-R-1-C MS

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.0	6.509		ug/L		65	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.0	7.735		ug/L		77	10 - 150
N-Nitrosodimethylamine	ND		10.0	6.119		ug/L		61	12 - 123
Pentachlorophenol	ND		20.0	14.91		ug/L		75	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	68		40 - 120
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	48		30 - 120
Nitrobenzene-d5	63		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-R-1-C MS
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384349

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Phenol-d6	57		35 - 120
Terphenyl-d14	70		37 - 144

Lab Sample ID: 440-174317-S-1-A MSD
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	
				Result	Qualifier				Limits	RPD	Limit	
2,4,6-Trichlorophenol	ND		10.1	8.926	BA	ug/L		89	37 - 144	31	30	
Bis(2-ethylhexyl) phthalate	ND		10.1	9.202		ug/L		92	10 - 150	17	25	
N-Nitrosodimethylamine	ND		10.1	7.765		ug/L		77	12 - 123	24	35	
Pentachlorophenol	ND		20.1	20.39	BA	ug/L		101	14 - 150	31	25	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	92		40 - 120
2-Fluorobiphenyl	80		50 - 120
2-Fluorophenol	75		30 - 120
Nitrobenzene-d5	81		45 - 120
Phenol-d6	79		35 - 120
Terphenyl-d14	85		37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-383738/1-A
Matrix: Water
Analysis Batch: 383608

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383738

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		01/23/17 07:27	01/23/17 18:13	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	76		10 - 150	01/23/17 07:27	01/23/17 18:13	1
DCB Decachlorobiphenyl (Surr)	50		18 - 134	01/23/17 07:27	01/23/17 18:13	1

Lab Sample ID: LCS 440-383738/2-A
Matrix: Water
Analysis Batch: 383608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
alpha-BHC	0.200	0.141		ug/L		70	37 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	70		10 - 150
DCB Decachlorobiphenyl (Surr)	65		18 - 134

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-174234-D-1-A MSD

Matrix: Water
Analysis Batch: 383608

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA
Prep Batch: 383738

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	ND		0.205	0.131		ug/L		64	40 - 120	NC	30
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	65		10 - 150								
DCB Decachlorobiphenyl (Surr)	36		18 - 134								

Lab Sample ID: 440-174234-E-1-A MS

Matrix: Water
Analysis Batch: 383608

Client Sample ID: Matrix Spike

Prep Type: Total/NA
Prep Batch: 383738

				MS	MS						
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	69		10 - 150								
DCB Decachlorobiphenyl (Surr)	44		18 - 134								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383773/4

Matrix: Water
Analysis Batch: 383773

Client Sample ID: Method Blank

Prep Type: Total/NA

		MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Nitrate as N	ND		0.11	0.055	mg/L			01/23/17 10:09	1	
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 10:09	1	

Lab Sample ID: LCS 440-383773/2

Matrix: Water
Analysis Batch: 383773

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

			Spike	LCS	LCS					
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits			
Nitrate as N	1.13	1.16		mg/L		103	90 - 110			
Nitrite as N	1.52	1.52		mg/L		100	90 - 110			

Lab Sample ID: 440-174234-K-1 MS

Matrix: Water
Analysis Batch: 383773

Client Sample ID: Matrix Spike

Prep Type: Total/NA

		Sample	Sample	Spike	MS	MS					
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Nitrate as N	1.4		1.13	2.43		mg/L		91	80 - 120		
Nitrite as N	ND		1.52	1.33		mg/L		88	80 - 120		

Lab Sample ID: 440-174234-K-1 MSD

Matrix: Water
Analysis Batch: 383773

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

		Sample	Sample	Spike	MSD	MSD					
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nitrate as N	1.4		1.13	2.63		mg/L		109	80 - 120	8	20
Nitrite as N	ND		1.52	1.60		mg/L		105	80 - 120	18	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 440-383774/4
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 10:09	1
Sulfate	ND		0.50	0.25	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383774/2
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.82		mg/L		96	90 - 110
Sulfate	5.00	5.07		mg/L		101	90 - 110

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.8		5.00	8.08		mg/L		86	80 - 120
Sulfate	3.3		5.00	7.55		mg/L		85	80 - 120

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chloride	3.8		5.00	8.95		mg/L		104	80 - 120	10	20
Sulfate	3.3		5.00	8.52		mg/L		104	80 - 120	12	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-383992/3
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 09:02	1

Lab Sample ID: LCS 440-383992/2
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

Lab Sample ID: MRL 440-383992/5
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.22		ug/L		105	75 - 125

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	30.7	LM	ug/L		123	80 - 120

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	31.0	LM	ug/L		124	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.00000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDD	ND		0.000050	0.000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDD	0.00000700	J,DX q	0.000050	0.000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-384921/1-A
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		0.020	0.010	mg/L		01/27/17 14:54	01/30/17 17:18	1

Lab Sample ID: LCS 440-384921/2-A
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	0.500	0.461		mg/L		92	85 - 115

Lab Sample ID: 440-174235-1 MS
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Outfall002_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	0.031		0.500	0.499		mg/L		94	70 - 130

Lab Sample ID: 440-174235-1 MSD
Matrix: Water
Analysis Batch: 385338

Client Sample ID: Outfall002_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384921

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	0.031		0.500	0.498		mg/L		93	70 - 130	0	20

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: MB 440-386042/1-A
Matrix: Water
Analysis Batch: 386175

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 386042

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		0.020	0.010	mg/L		02/02/17 10:37	02/02/17 17:35	1

Lab Sample ID: LCS 440-386042/2-A
Matrix: Water
Analysis Batch: 386175

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 386042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	0.500	0.453		mg/L		91	85 - 115

Lab Sample ID: LCSD 440-386042/4-A
Matrix: Water
Analysis Batch: 386175

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 386042

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	0.500	0.458		mg/L		92	85 - 115	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-384922/1-A
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/27/17 14:56	01/31/17 11:49	1
Copper	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49	1
Lead	ND		1.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 14:56	01/31/17 11:49	1

Lab Sample ID: LCS 440-384922/2-A
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	72.3		ug/L		90	85 - 115
Copper	80.0	73.7		ug/L		92	85 - 115
Lead	80.0	72.6		ug/L		91	85 - 115
Selenium	80.0	73.9		ug/L		92	85 - 115

Lab Sample ID: 440-174235-1 MS
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Outfall002_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	69.1		ug/L		86	70 - 130
Copper	7.2		80.0	79.7		ug/L		91	70 - 130
Lead	4.0		80.0	73.3		ug/L		87	70 - 130
Selenium	ND		80.0	67.1		ug/L		84	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174235-1 MSD
Matrix: Water
Analysis Batch: 385495

Client Sample ID: Outfall002_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384922

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Cadmium	ND		80.0	69.2		ug/L		87	70 - 130	0	20	
Copper	7.2		80.0	79.1		ug/L		90	70 - 130	1	20	
Lead	4.0		80.0	74.7		ug/L		88	70 - 130	2	20	
Selenium	ND		80.0	68.1		ug/L		85	70 - 130	1	20	

Lab Sample ID: MB 440-385801/1-D
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 386038

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		02/02/17 10:08	02/03/17 16:03	1
Copper	ND		2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1
Lead	ND		1.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1
Selenium	ND		2.0	0.50	ug/L		02/02/17 10:08	02/03/17 16:03	1

Lab Sample ID: LCS 440-385801/2-D
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 386038

Analyte	Spike Added	LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	RPD
Cadmium	80.0	73.4		ug/L		92	85 - 115	
Copper	80.0	72.7		ug/L		91	85 - 115	
Lead	80.0	74.3		ug/L		93	85 - 115	
Selenium	80.0	73.7		ug/L		92	85 - 115	

Lab Sample ID: 440-174235-3 MS
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Outfall002_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 386038

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec.	
				Result	Qualifier				Limits	RPD
Cadmium	ND	QP	80.0	73.9		ug/L		92	70 - 130	
Copper	2.3	QP	80.0	75.8		ug/L		92	70 - 130	
Lead	ND	QP	80.0	75.1		ug/L		94	70 - 130	
Selenium	ND	QP	80.0	76.9		ug/L		96	70 - 130	

Lab Sample ID: 440-174235-3 MSD
Matrix: Water
Analysis Batch: 386382

Client Sample ID: Outfall002_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 386038

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Cadmium	ND	QP	80.0	76.6		ug/L		96	70 - 130	4	20	
Copper	2.3	QP	80.0	77.8		ug/L		94	70 - 130	3	20	
Lead	ND	QP	80.0	75.7		ug/L		95	70 - 130	1	20	
Selenium	ND	QP	80.0	77.8		ug/L		97	70 - 130	1	20	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384111/1-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384111

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:13	1

Lab Sample ID: LCS 440-384111/2-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.11		ug/L		101	85 - 115

Lab Sample ID: 440-174317-A-1-B MS
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.77		ug/L		97	70 - 130

Lab Sample ID: 440-174317-A-1-C MSD
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.82		ug/L		98	70 - 130	1	20

Lab Sample ID: MB 440-385801/1-B
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385922

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/01/17 23:48	02/02/17 20:49	1

Lab Sample ID: LCS 440-385801/2-B
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385922

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.36		ug/L		92	85 - 115

Lab Sample ID: 440-174235-3 MS
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Outfall002_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385922

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.40		ug/L		92	70 - 130

Lab Sample ID: 440-174235-3 MSD
Matrix: Water
Analysis Batch: 386411

Client Sample ID: Outfall002_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385922

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	7.04		ug/L		88	70 - 130	5	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-383844/5
Matrix: Water
Analysis Batch: 383844

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			01/23/17 15:55	1

Lab Sample ID: 440-174234-P-1 DU
Matrix: Water
Analysis Batch: 383844

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	350		354		NTU		0.2	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384518/1
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:21	1

Lab Sample ID: LCS 440-384518/2
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1020		mg/L		102	90 - 110

Lab Sample ID: 440-174110-D-1 DU
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	72		71.0		mg/L		1	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-384715/1
Matrix: Water
Analysis Batch: 384715

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/26/17 18:10	1

Lab Sample ID: LCS 440-384715/2
Matrix: Water
Analysis Batch: 384715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1070		mg/L		107	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-174740-B-1 DU
Matrix: Water
Analysis Batch: 384715

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	40		39.0		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-383875/1-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383875

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:16	1

Lab Sample ID: LCS 440-383875/2-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	96.4		ug/L		96	90 - 110

Lab Sample ID: LCSD 440-383875/3-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	93.3		ug/L		93	90 - 110	3	10

Lab Sample ID: 440-174110-D-1-B MS
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	98.3		ug/L		98	70 - 115

Lab Sample ID: 440-174110-D-1-C MSD
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	100		ug/L		100	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-384964/10
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 13:34	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: LCS 440-384964/11
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.160		mg/L		103	90 - 110

Lab Sample ID: MRL 440-384964/9
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.3150		mg/L		158	10 - 200

Lab Sample ID: 440-174234-AQ-1 MS
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	4.960		mg/L		99	90 - 110

Lab Sample ID: 440-174234-AQ-1 MSD
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.040		mg/L		101	90 - 110	2	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-383876/3
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			01/23/17 14:53	1

Lab Sample ID: LCS 440-383876/4
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.274		mg/L		109	90 - 110

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	ND		0.250	0.239		mg/L		96	50 - 125

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383876

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	ND		0.250	0.216		mg/L		87	50 - 125	10	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-383675/1
Matrix: Water
Analysis Batch: 383675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			01/22/17 10:00	1

Lab Sample ID: LCS 440-383675/4
Matrix: Water
Analysis Batch: 383675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	217		mg/L		109	85 - 115

Lab Sample ID: LCSD 440-383675/5
Matrix: Water
Analysis Batch: 383675

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	213		mg/L		107	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

GC/MS Semi VOA

Prep Batch: 384349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	625	
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 384955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	384349
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	384349

GC Semi VOA

Analysis Batch: 383608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	608 Pesticides	383738
MB 440-383738/1-A	Method Blank	Total/NA	Water	608 Pesticides	383738
LCS 440-383738/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	383738
440-174234-D-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	383738
440-174234-E-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	383738

Prep Batch: 383738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	608	
MB 440-383738/1-A	Method Blank	Total/NA	Water	608	
LCS 440-383738/2-A	Lab Control Sample	Total/NA	Water	608	
440-174234-D-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-174234-E-1-A MS	Matrix Spike	Total/NA	Water	608	

HPLC/IC

Analysis Batch: 383773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	300.0	
MB 440-383773/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383773/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 383774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	300.0	
MB 440-383774/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383774/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

HPLC/IC (Continued)

Analysis Batch: 383992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	314.0	
MB 440-383992/3	Method Blank	Total/NA	Water	314.0	
LCS 440-383992/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-383992/5	Lab Control Sample	Total/NA	Water	314.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 385504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	1613B	
440-174235-1 - RA	Outfall002_20170121_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1 - RA	Outfall002_20170121_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384111

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	245.1	
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174317-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-174317-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	245.1	384111
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	384111
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	384111

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Metals (Continued)

Analysis Batch: 384220 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	384111
440-174317-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	384111

Prep Batch: 384921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-384921/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-384921/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174235-1 MS	Outfall002_20170121_Comp	Total Recoverable	Water	200.2	
440-174235-1 MSD	Outfall002_20170121_Comp	Total Recoverable	Water	200.2	

Prep Batch: 384922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-384922/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-384922/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174235-1 MS	Outfall002_20170121_Comp	Total Recoverable	Water	200.2	
440-174235-1 MSD	Outfall002_20170121_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 385338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384921
MB 440-384921/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	384921
LCS 440-384921/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	384921
440-174235-1 MS	Outfall002_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384921
440-174235-1 MSD	Outfall002_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384921

Analysis Batch: 385495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total Recoverable	Water	200.8	384922
MB 440-384922/1-A	Method Blank	Total Recoverable	Water	200.8	384922
LCS 440-384922/2-A	Lab Control Sample	Total Recoverable	Water	200.8	384922
440-174235-1 MS	Outfall002_20170121_Comp	Total Recoverable	Water	200.8	384922
440-174235-1 MSD	Outfall002_20170121_Comp	Total Recoverable	Water	200.8	384922

Filtration Batch: 385801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	FILTRATION	
MB 440-385801/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-385801/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-385801/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-385801/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174235-3 MS	Outfall002_20170121_Comp_F	Dissolved	Water	FILTRATION	
440-174235-3 MSD	Outfall002_20170121_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 385922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	245.1	385801
MB 440-385801/1-B	Method Blank	Dissolved	Water	245.1	385801
LCS 440-385801/2-B	Lab Control Sample	Dissolved	Water	245.1	385801
440-174235-3 MS	Outfall002_20170121_Comp_F	Dissolved	Water	245.1	385801

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Metals (Continued)

Prep Batch: 385922 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3 MSD	Outfall002_20170121_Comp_F	Dissolved	Water	245.1	385801

Prep Batch: 386038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	200.2	385801
MB 440-385801/1-D	Method Blank	Dissolved	Water	200.2	385801
LCS 440-385801/2-D	Lab Control Sample	Dissolved	Water	200.2	385801
440-174235-3 MS	Outfall002_20170121_Comp_F	Dissolved	Water	200.2	385801
440-174235-3 MSD	Outfall002_20170121_Comp_F	Dissolved	Water	200.2	385801

Prep Batch: 386042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	200.2	385801
MB 440-386042/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-386042/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
LCSD 440-386042/4-A	Lab Control Sample Dup	Total Recoverable	Water	200.2	

Analysis Batch: 386175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	386042
MB 440-386042/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	386042
LCS 440-386042/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	386042
LCSD 440-386042/4-A	Lab Control Sample Dup	Total Recoverable	Water	200.7 Rev 4.4	386042

Analysis Batch: 386382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	200.8	386038
MB 440-385801/1-D	Method Blank	Dissolved	Water	200.8	386038
LCS 440-385801/2-D	Lab Control Sample	Dissolved	Water	200.8	386038
440-174235-3 MS	Outfall002_20170121_Comp_F	Dissolved	Water	200.8	386038
440-174235-3 MSD	Outfall002_20170121_Comp_F	Dissolved	Water	200.8	386038

Analysis Batch: 386411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-3	Outfall002_20170121_Comp_F	Dissolved	Water	245.1	385922
MB 440-385801/1-B	Method Blank	Dissolved	Water	245.1	385922
LCS 440-385801/2-B	Lab Control Sample	Dissolved	Water	245.1	385922
440-174235-3 MS	Outfall002_20170121_Comp_F	Dissolved	Water	245.1	385922
440-174235-3 MSD	Outfall002_20170121_Comp_F	Dissolved	Water	245.1	385922

General Chemistry

Analysis Batch: 383675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	SM5210B	
USB 440-383675/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-383675/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-383675/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

General Chemistry (Continued)

Analysis Batch: 383844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	180.1	
MB 440-383844/5	Method Blank	Total/NA	Water	180.1	
440-174234-P-1 DU	Duplicate	Total/NA	Water	180.1	

Prep Batch: 383875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	Distill/CN	
MB 440-383875/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCS 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 383876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	SM 5540C	
MB 440-383876/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-383876/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 384201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	SM 4500 CN E	383875
MB 440-383875/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	383875

Analysis Batch: 384518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	SM 2540C	
MB 440-384518/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384518/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174110-D-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 384715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	SM 2540D	
MB 440-384715/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-384715/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174740-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 384964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-384964/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-384964/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-384964/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-174234-AQ-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

General Chemistry (Continued)

Analysis Batch: 384964 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174234-AQ-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
BA	Relative percent difference out of control

HPLC/IC

Qualifier	Qualifier Description
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
BU	Analyzed out of holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



February 7, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall002_20170120__Comp (440-174235-1)
DATE RECEIVED: 1/23/2017
ABC LAB NO.: TAM0117.182

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = FAIL % EFFECT = 55.46 %

*NOTE: TIE Baseline initiated due to 55.46% effect and client approval.

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 01 Feb-17 16:06 (p 1 of 1)
 Test Code: TAM0117.182sel | 10-0546-4800

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 01-4427-3069	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:40	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-1965-4537	Code: TAM0117.182sel	Client: Test America Irvine
Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 67h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
14-4627-1620	Cell Density	TST-Welch's t Test	1.0000	100% failed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
14-4627-1620	Cell Density	Control CV	0.02809	<<	0.2	Yes	Passes Criteria
14-4627-1620	Cell Density	Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.398E+6	1.519E+6	1.458E+4	4.123E+4	2.81%	0.00%
100		8	6.539E+5	6.232E+5	6.845E+5	6.050E+5	7.250E+5	1.296E+4	3.666E+4	5.61%	55.46%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		6.350E+5	6.050E+5	6.340E+5	6.770E+5	7.250E+5	6.350E+5	6.710E+5	6.490E+5

CETIS Analytical Report

Report Date: 01 Feb-17 16:06 (p 1 of 2)
 Test Code: TAM0117.182sel | 10-0546-4800

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 14-4627-1620	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Analized: 01 Feb-17 16:04	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 01-4427-3069	Test Type: Cell Growth	Analyst:	Start Date: 23 Jan-17 14:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:40	Species: Selenastrum capricornutum	Brine: Not Applicable	Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-1965-4537	Code: TAM0117.182sel	Client: Test America Irvine	Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report		Sample Age: 67h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% failed cell density

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100	-26.37	0.6938	13	CDF	1.0000	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02809	<<	0.2	Yes	Passes Criteria
Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.651E+12	2.651E+12	1	1742	<1.0E-37	Significant Effect
Error	2.131E+10	1.522E+09	14			
Total	2.673E+12		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.3259	8.862	0.5771	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.1916	8.862	0.6682	Equal Variances
Variances	Variance Ratio F Test	1.265	8.885	0.7642	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.1601	3.878	0.9952	Normal Distribution
Distribution	D'Agostino Skewness Test	0.07811	2.576	0.9377	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1292	0.2471	0.7443	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9886	0.8408	0.9982	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.478E+6	1.398E+6	1.519E+6	1.458E+4	2.81%	0.00%
100		8	6.539E+5	6.232E+5	6.845E+5	6.420E+5	6.050E+5	7.250E+5	1.296E+4	5.61%	55.46%

Cell Density Detail

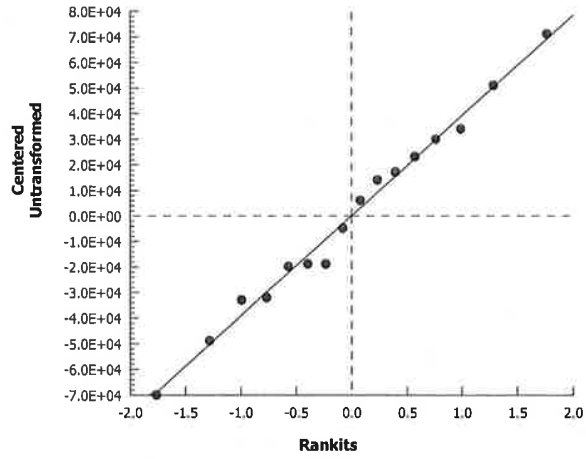
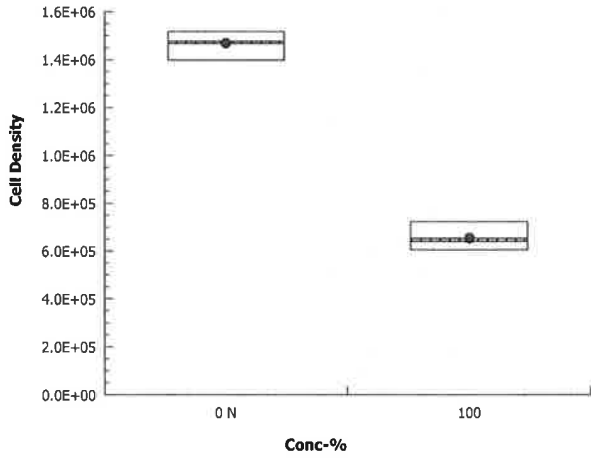
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		6.350E+5	6.050E+5	6.340E+5	6.770E+5	7.250E+5	6.350E+5	6.710E+5	6.490E+5

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-4627-1620 Endpoint: Cell Density CETIS Version: CETISv1.9.2
Analyzed: 01 Feb-17 16:04 Analysis: Parametric Bioequivalence-Two Sample Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 01 Feb-17 16:06 (p 1 of 2)
 Test Code: TAM0117.182sel | 10-0546-4800

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 01-4427-3069	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:20	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:40	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-1965-4537	Code: TAM0117.182sel	Client: Test America Irvine
Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 67h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	62			62	62	0	0	0.0%	0
Overall		2	65.5	21.03	110	62	69	3.5	4.95	7.56%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	438	451.2	439	452	2.379	5.32	1.2%	0
100		5	246.4	245.3	247.5	245	247	0.4	0.8944	0.36%	0
Overall		10	345.5	270.7	420.3	245	452	33.05	104.5	30.25%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	83			83	83	0	0	0.0%	0
Overall		2	90	1.057	178.9	83	97	7	9.899	11.00%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.64	7.272	8.008	7.3	8.1	0.1327	0.2966	3.88%	0
Overall		10	7.58	7.419	7.741	7.3	8.1	0.07118	0.2251	2.97%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.16	24.02	24.3	24	24.5	0.06182	0.1955	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 01 Feb-17 16:06 (p 2 of 2)
Test Code: TAM0117.182sel | 10-0546-4800

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		62

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	447	452	439	440	445
100		245	247	246	247	247

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		83

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.7	7.4	7.4	7.5	7.6
100		8.1	7.5	7.3	7.6	7.7

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.2	24.5	24	24.1	24
100		24.2	24.5	24	24.1	24



TestAmerica Irvine
 17461 Denan Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: **Patel, Urvashi** Lab PM: **Patel, Urvashi** State of Origin: **California** COC No: **440-106711.1**

Shipping/Receiving: **Urvashi.patel@testamericainc.com** E-Mail: **Urvashi.patel@testamericainc.com** Page: **Page 1 of 1**

Company: **Aquatic Bioassay** Accreditation Required (See note): **440-174235-1** Job #: **440-174235-1**

Address: **29 North Olive Street, Ventura CA, 93001** Due Date Requested: **2/3/2017**

City: **Ventura** TAT Requested (days): **3**

State, Zip: **CA, 93001** PO #: **WD #:**

Project Name: **Boeing NPDES SSFL outfalls** Project #: **44009879**

Site: **SSDW#:**

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=metalloid, BT=trace, A=air)	Field Filtered Sample (Yes or No)		Analysis Requested		Total Number of containers	Special Instructions/Note:
					Perform MS/MSD (Yes or No)	SUB (Chronic-Selenium)/ Chronic-Selenium	Temp. deg. C	Chlorine (mg/L)		
Outfall002_20170120_Comp (440-174235-1)	1/20/17	19:28 Pacific	Water	Water	X				6	

Unconfirmed

Deliverable Requested: **I, II, III, IV, Other (Specify)** Primary Deliverable Rank: **2**

Empty Kit Relinquished by: **[Signature]** Date/Time: **1-23-17 0800** Company: **TA**

Relinquished by: **[Signature]** Date/Time: **1-23-17 1115** Company: **TA**

Relinquished by: **[Signature]** Date/Time: **01/23/17 1103** Company: **ABC**

Custody Seals Intact: **Δ Yes Δ No** Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For **Months**

Special Instructions/QC Requirements:

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

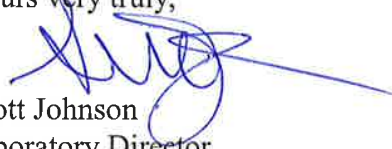
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

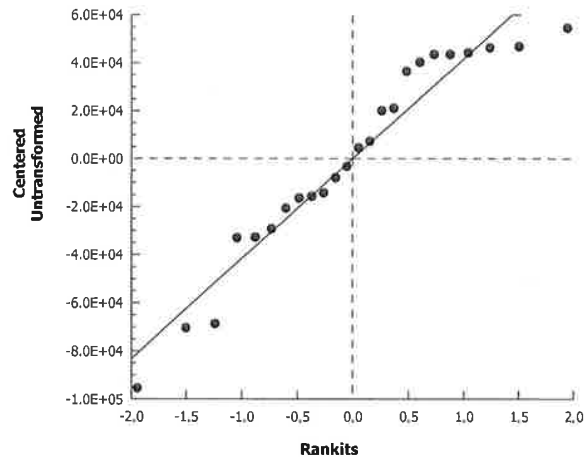
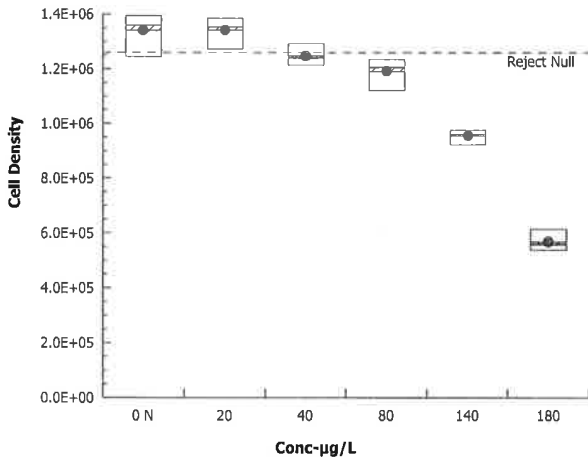
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Senastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 14-2916-7122	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 19 Jan-17 16:21	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:	
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 09 Jan-17 12:00	Species: Senastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab	
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	34.35	13.62	61.11
IC10	69.42	18.65	99.03
IC15	93.35	62.81	109.5
IC20	110.4	88.48	124.6
IC25	127.5	108.9	141.2
IC40	155.7	149.9	160.7
IC50	169.5	164.4	175.1

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.0%
20		4	1.341E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.82%	6.92%
80		4	1.192E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5





February 7, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Boeing NPDES SSFL Outfalls
SAMPLE ID.: Outfall002_20170120_Comp (440-174235-1)
DATE RECEIVED: 1/23/2017
ABC LAB NO.: TAM0117.182

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY [BASELINE TIE]

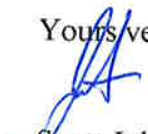
GROWTH: PERCENT EFFECT = 9.29% IWC = 100.00%

*NOTE: TIE Baseline initiated due to 55.46% effect in initial test and client approval. The "baseline" test was conducted and toxicity was reduced, $TU_a < 1.00$. Therefore, there was no purpose to continue with further TIE manipulations.

In conclusion, the fact that toxicity was observed in the initial chronic tests and reduced toxicity was observed during the "baseline" tests indicate that the toxicant was most likely associated with volatile compound(s). The compound(s) apparently dissipated to non-toxic levels between the time of the initiation of the initial chronic toxicity tests and the initiation of the "baseline" toxicity testing.

A TIE report will not be issued for this investigation. The attached report contains the results of the baseline test.

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 07 Feb-17 10:45 (p 1 of 1)
 Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-3386-0491	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:07	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 12:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-3382-7233	Code: TAM0117.182TIEB	Client: Test America Irvine
Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 12d 18h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
14-3351-9995	Cell Density	Dunnett Multiple Comparison Test	50	100	70.71	2	8.55%
18-8823-6729	Cell Density	TST-Welch's t Test	100	> 100	n/a	1	n/a

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
13-8255-6154	Cell Density	Linear Interpolation (ICPIN)	IC5	74.97	41.52	n/a	1.334	
			IC10	99.94	64.35	n/a	1.001	
			IC15	>100	n/a	n/a	<1	
			IC20	>100	n/a	n/a	<1	
			IC25	>100	n/a	n/a	<1	
			IC40	>100	n/a	n/a	<1	
			IC50	>100	n/a	n/a	<1	

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
13-8255-6154	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
14-3351-9995	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
18-8823-6729	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
13-8255-6154	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
14-3351-9995	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
18-8823-6729	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
14-3351-9995	Cell Density	PMSD	0.08553	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.16%	0.00%
50		4	1.153E+6	1.071E+6	1.234E+6	1.085E+6	1.196E+6	2.568E+4	5.136E+4	4.46%	-0.94%
100		4	1.032E+6	9.496E+5	1.115E+6	9.860E+5	1.096E+6	2.604E+4	5.209E+4	5.04%	9.59%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
50		1.141E+6	1.085E+6	1.196E+6	1.189E+6
100		1.096E+6	9.860E+5	9.940E+5	1.054E+6

CETIS Analytical Report

Report Date: 07 Feb-17 10:45 (p 1 of 4)
 Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	14-3351-9995	Endpoint:	Cell Density	CETIS Version:	CETISv1.9.2
Analyzed:	07 Feb-17 10:38	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	20-3386-0491	Test Type:	Cell Growth	Analyst:	
Start Date:	02 Feb-17 13:07	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	06 Feb-17 12:50	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	96h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	06-3382-7233	Code:	TAM0117.182TIEB	Client:	Test America Irvine
Sample Date:	20 Jan-17 19:28	Material:	Sample Water	Project:	Boeing NPDES SSFL Outfalls
Receipt Date:	23 Jan-17 11:23	Source:	Bioassay Report		
Sample Age:	12d 18h (1 °C)	Station:	Outfall002_20170120_Comp (440-174235-		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	50	100	70.71	2	8.55%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		50	-0.2399	2.18	97670	6	CDF	0.7536	Non-Significant Effect
		100*	2.444	2.18	97670	6	CDF	0.0329	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.08553	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.542E+10	1.771E+10	2	4.411	0.0462	Significant Effect
Error	3.614E+10	4.015E+09	9			
Total	7.156E+10		11			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	0.7863	9.21	0.6749	Equal Variances
Variances	Levene Equality of Variance Test	1.023	8.022	0.3979	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.8055	8.022	0.4766	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.296	3.878	0.6239	Normal Distribution
Distribution	D'Agostino Skewness Test	0.6219	2.576	0.5340	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1531	0.2801	0.6925	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9535	0.8025	0.6888	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.156E+6	1.037E+6	1.219E+6	4.091E+4	7.16%	0.00%
50		4	1.153E+6	1.071E+6	1.234E+6	1.165E+6	1.085E+6	1.196E+6	2.568E+4	4.46%	-0.94%
100		4	1.032E+6	9.496E+5	1.115E+6	1.024E+6	9.860E+5	1.096E+6	2.604E+4	5.04%	9.59%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
50		1.141E+6	1.085E+6	1.196E+6	1.189E+6
100		1.096E+6	9.860E+5	9.940E+5	1.054E+6

CETIS Analytical Report

Report Date: 07 Feb-17 10:45 (p 2 of 4)
Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test

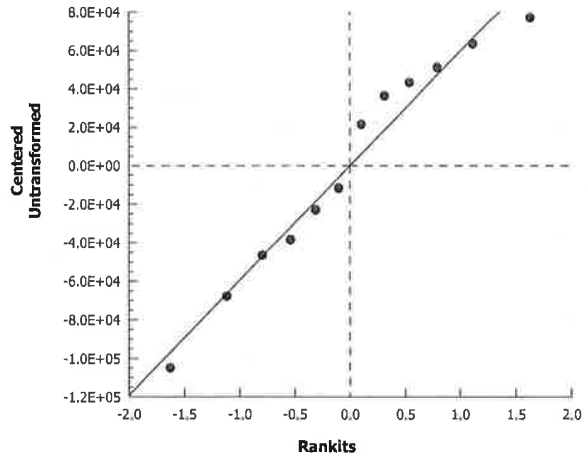
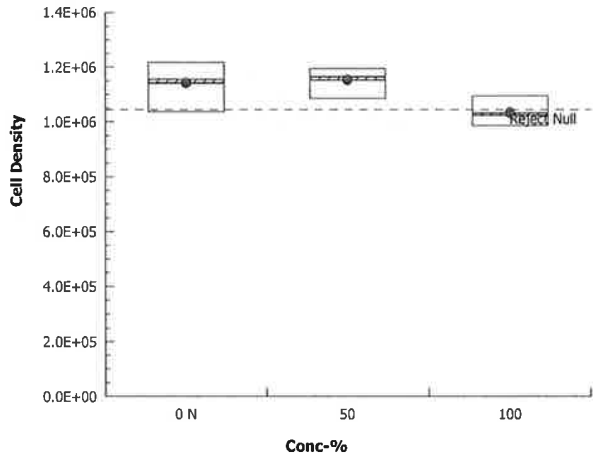
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-3351-9995
Analyzed: 07 Feb-17 10:38

Endpoint: Cell Density
Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 07 Feb-17 10:45 (p 3 of 4)
 Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 18-8823-6729	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 07 Feb-17 10:44	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes			
Batch ID: 20-3386-0491	Test Type: Cell Growth	Analyst:			
Start Date: 02 Feb-17 13:07	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 06 Feb-17 12:50	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 96h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 06-3382-7233	Code: TAM0117.182TIEB	Client: Test America Irvine			
Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls			
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report				
Sample Age: 12d 18h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-				

Data Transform	Alt Hyp	TST_b	NOEL	LOEL	TOEL	TU
Untransformed	C*b < T	0.75	100	> 100	n/a	1

TST-Welch's t Test								
Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		50*	7.404	0.7267	5	CDF	3.5E-04	Non-Significant Effect
		100*	4.373	0.7267	5	CDF	0.0036	Non-Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.542E+10	1.771E+10	2	4.411	0.0462	Significant Effect
Error	3.614E+10	4.015E+09	9			
Total	7.156E+10		11			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	0.7863	9.21	0.6749	Equal Variances	
Variances	Levene Equality of Variance Test	1.023	8.022	0.3979	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.8055	8.022	0.4766	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.296	3.878	0.6239	Normal Distribution	
Distribution	D'Agostino Skewness Test	0.6219	2.576	0.5340	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1531	0.2801	0.6925	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.9535	0.8025	0.6888	Normal Distribution	

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.156E+6	1.037E+6	1.219E+6	4.091E+4	7.16%	0.00%
50		4	1.153E+6	1.071E+6	1.234E+6	1.165E+6	1.085E+6	1.196E+6	2.568E+4	4.46%	-0.94%
100		4	1.032E+6	9.496E+5	1.115E+6	1.024E+6	9.860E+5	1.096E+6	2.604E+4	5.04%	9.59%

Cell Density Detail					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
50		1.141E+6	1.085E+6	1.196E+6	1.189E+6
100		1.096E+6	9.860E+5	9.940E+5	1.054E+6

Selenastrum Growth Test

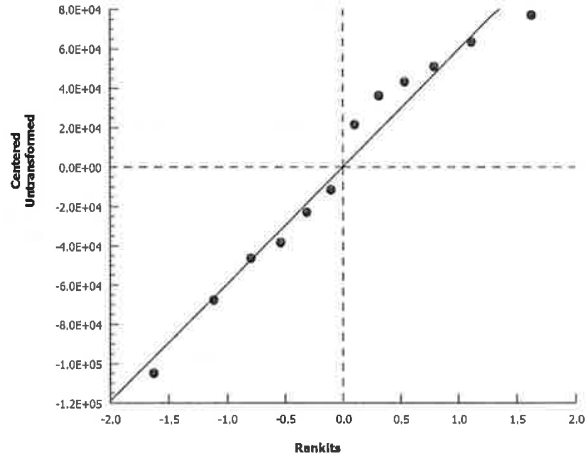
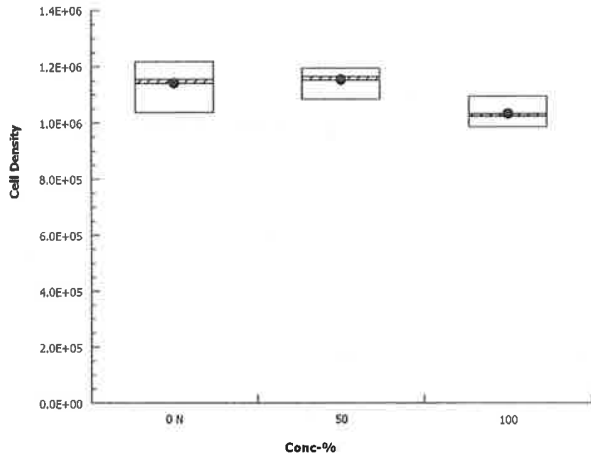
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 18-8823-6729
Analyzed: 07 Feb-17 10:44

Endpoint: Cell Density
Analysis: Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 07 Feb-17 10:45 (p 1 of 2)
 Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 13-8255-6154	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 07 Feb-17 10:38	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 20-3386-0491	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:07	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 12:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-3382-7233	Code: TAM0117.182TIEB	Client: Test America Irvine
Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 12d 18h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC5	74.97	41.52	n/a	1.334	n/a	2.409
IC10	99.94	64.35	n/a	1.001	n/a	1.554
IC15	>100	n/a	n/a	<1	n/a	n/a
IC20	>100	n/a	n/a	<1	n/a	n/a
IC25	>100	n/a	n/a	<1	n/a	n/a
IC40	>100	n/a	n/a	<1	n/a	n/a
IC50	>100	n/a	n/a	<1	n/a	n/a

Cell Density Summary

Conc-%	Code	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.17%	0.0%
50		4	1.153E+6	1.085E+6	1.196E+6	2.568E+4	5.136E+4	4.46%	-0.94%
100		4	1.032E+6	9.860E+5	1.096E+6	2.604E+4	5.209E+4	5.05%	9.59%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
50		1.141E+6	1.085E+6	1.196E+6	1.189E+6
100		1.096E+6	9.860E+5	9.940E+5	1.054E+6

CETIS Measurement Report

Report Date: 07 Feb-17 10:45 (p 1 of 2)
 Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-3386-0491	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:07	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 12:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 06-3382-7233	Code: TAM0117.182TIEB	Client: Test America Irvine
Sample Date: 20 Jan-17 19:28	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 12d 18h (1 °C)	Station: Outfall002_20170120_Comp (440-174235-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
50		1	60			60	60	0	0	0.0%	0
100		1	54			54	54	0	0	0.0%	0
Overall		3	60.67	43.22	78.11	54	68	4.055	7.024	11.58%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	432.8	456.4	434	460	4.238	9.476	2.13%	0
50		5	319.2	318.2	320.2	318	320	0.3742	0.8367	0.26%	0
100		5	249.6	245.8	253.4	248	255	1.364	3.05	1.22%	0
Overall		15	337.8	291.5	384.1	248	460	21.61	83.69	24.78%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	88			88	88	0	0	0.0%	0
50		1	87			87	87	0	0	0.0%	0
100		1	72			72	72	0	0	0.0%	0
Overall		3	82.33	60.07	104.6	72	88	5.175	8.963	10.89%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.86	7.672	8.048	7.6	8	0.06782	0.1517	1.93%	0
50		5	8	8	8	8	8	0	0	0.0%	0
100		5	8.02	7.964	8.076	8	8.1	0.02	0.04473	0.56%	0
Overall		15	7.96	7.898	8.022	7.6	8.1	0.02895	0.1121	1.41%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
50		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
100		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		15	24.1	24.06	24.14	24	24.2	0.0169	0.06547	0.27%	0 (0%)

CETIS Measurement Report

Report Date: 07 Feb-17 10:45 (p 2 of 2)

Test Code: TAM0117.182TIEB | 12-8474-1745

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	68
50		60
100		54

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	434	442	444	443	460
50		320	318	319	319	320
100		248	248	249	248	255

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	88
50		87
100		72

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	8	7.9	7.9	7.9	7.6
50		8	8	8	8	8
100		8.1	8	8	8	8

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24	24.1	24.1	24.1	24.2
50		24	24.1	24.1	24.1	24.2
100		24	24.1	24.1	24.1	24.2

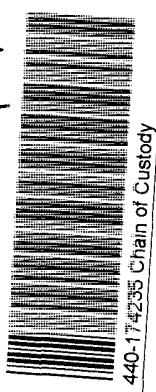
1 of 2
1 of 3

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 002 Comp		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.950.7312, 818.589.0702 (cell)		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 002 Comp									
Sampler: BRYAN DENSON		Sample I.D. Outfall002_20170120_Comp		Sample Matrix WM		Container Type 1 L Glass Amber		# of Cont. 2		Preservative None		Bottle # 110		MS/MSD No	
Sampling Date/Time 1/20/2017 14:28		Sample Description Outfall002_20170120_Comp_Extra		Container Type 1 L Glass Amber		# of Cont. 2		Preservative None		Bottle # 110		MS/MSD No		Comments 48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity	
Relinquished By Urvashi Patel		Date/Time 1/27/17 15:00		Company Test America		Relinquished By Urvashi Patel		Date/Time 1/27/17 15:00		Company Test America		Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____		Sample Integrity: (Check) Intact: _____ On Ice: _____	
Relinquished By From Walk in fridge		Date/Time 1/27/17 15:00		Company Test America		Relinquished By From Walk in fridge		Date/Time 1/27/17 15:00		Company Test America		Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____		Sample Integrity: (Check) Intact: _____ On Ice: _____	
Relinquished By From Walk in fridge		Date/Time 1/27/17 15:00		Company Test America		Relinquished By From Walk in fridge		Date/Time 1/27/17 15:00		Company Test America		Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____		Sample Integrity: (Check) Intact: _____ On Ice: _____	

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.



3.8/3.4
 9.1/3.4
 9.3/3.1
 4.1/4.4
 4.8/5.0

- 1
- 2
- 3
- 4
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- 6
- 7
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- 11
- 12
- 13
- 14
- 15

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Patel, Urvashi	440-174235 Chain of Custody	SOC No: 440-106725.1
Client Contact: Shipping/Receiving		Phone: urvashi.patel@testamericainc.com	E-Mail: urvashi.patel@testamericainc.com	State or Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 440-174235-1	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
Address: 13715 Rider Trail North,		Due Date Requested: 2/2/2017		Analysis Requested	
City: Earth City		TAT Requested (days):		Total Number of Containers	
State, Zip: MO, 63045		PO #:		900.0/Evaporation Gross Alpha/Beta	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:		901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
Email:		Project #: 44009879		904.0/PreSep_0 Radium-226	
Site: Boeing NPDES SSFL outfalls		SSOW#:		905.5/PreSep_7 Strontium-90	
Sample Identification - Client ID (Lab ID)		Sample Date		906.0/LC_Susp Tritium	
Outfall002_20170120_Comp (440-174235-1)		1/20/17		A01R_U/Exchrom_Actin Total Uranium	
Sample Type (C=Comp, G=grab)		Sample Time		909.0/PreSep_Dist_Susp Tritium	
Preservation Code: Water		19:28 Pacific		910.0/PreSep_21 Radium-226	
Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Field Filtered Sample (Yes or No)		911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
		Perform MS/MSD (Yes or No)		900.0/PreSep_0 Radium-226	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
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				905.5/PreSep_7 Strontium-90	
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				909.0/PreSep_Dist_Susp Tritium	
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				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	
				901.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				904.0/PreSep_0 Radium-226	
				905.5/PreSep_7 Strontium-90	
				906.0/LC_Susp Tritium	
				A01R_U/Exchrom_Actin Total Uranium	
				909.0/PreSep_Dist_Susp Tritium	
				910.0/PreSep_21 Radium-226	
				911.1,Cs/Fill_Geo_0 K-40 and Cesium-137	
				900.0/Evaporation Gross Alpha/Beta	

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Lao PM Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-106720.1
Client Contact: Shipping/Receiving		Phone: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): 440-174235-1		
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Job #: 440-174235-1		
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Preservation Codes: M - Hexane N - None O - AsNaCl2 P - Na2O4S Q - NaHSO4 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Other:		
Email:		Analysis Requested		
Project Name: Boeing NPDES SSFL outfalls		Total Number of Containers		
Site:		1613B/1613B_SoX_Sep_P Standard List w/ Totals		
Due Date Requested: 2/2/2017		Perform MS/MSD (Yes or No)		
TAT Requested (days):		Field Filtered Sample (Yes or No)		
PO #:		Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)		
WO #:		Sample Type (C=Comp, G=grab)		
Project #: 44009879		Sample Date		
SSOW#:		Sample Time		
Sample Identification - Client ID (Lab ID)		Preservation Code:		
Outfall002_20170120_Comp (440-174235-1)		Water		
Outfall002_20170120_Comp_Extra (440-174235-2)		Water		
Special Instructions/Note:		See OAS, Boeing_wiu to zero, ug/L. Use Boeing glassware.		
		See OAS, Boeing_wiu to zero, ug/L. Use Boeing glassware.		

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <i>Wa Bamba</i>	2/23/17	17:00	Company: TAI
Relinquished by:	Date/Time:		Company: FedEx
Relinquished by:	Date/Time:		Company: Roy in Turpan
Relinquished by:	Date/Time:		Company: TAMS
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Cooler Temperature(s) °C and Other Remarks: 1.0°C 9cc		



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174235-1

Login Number: 174235

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174235-1

Login Number: 174235

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/25/17 12:22 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174235-1	Outfall002_20170121_Comp	67	62	71	62	69	72	66	60
440-174235-1 - RA	Outfall002_20170121_Comp		56						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174235-1	Outfall002_20170121_Comp	56	56	59	69	60	66	76	60
440-174235-1 - RA	Outfall002_20170121_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174235-1	Outfall002_20170121_Comp		56		56		59	69	
440-174235-1 - RA	Outfall002_20170121_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174235-1	Outfall002_20170121_Comp		60		66		76
440-174235-1 - RA	Outfall002_20170121_Comp						
MB 320-147877/1-A	Method Blank		69		78		96

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174235-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174235-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170121_ Comp	440-174235-1	N/A	WM	1/21/17 2:00 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174235-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha detector efficiency was less than 20%; therefore, the nondetected result for gross alpha was qualified as estimated (J) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of gross alpha and total uranium. Gross alpha not different from the method blank at the 5% level of confidence and was therefore qualified as estimated (J) in the site sample. Total uranium was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:



III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401742352

Analysis Method E900

Sample Name Outfall002_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 2:00:00 PM Validation Level: 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	5.27	1.83	1.83	1.83	pCi/L		J	B, *III
Gross Beta Analytes	GROSSBETA	9.34	1.56	1.22	1.22	pCi/L			

Analysis Method E901.1

Sample Name Outfall002_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 2:00:00 PM Validation Level: 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-4.06	9.99	17.1	17.1	pCi/L	U	U	
Potassium-40	13966-00-2	-77.3	119	193	193	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 2:00:00 PM Validation Level: 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	-0.517	0.980	2.18	2.18	pCi/L	U G	U	

Analysis Method E904.0

Sample Name Outfall002_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 2:00:00 PM Validation Level: 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	2.13	1.63	2.55	2.55	pCi/L	U G	U	

Analysis Method E905.0

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.106	0.322	0.557	0.557	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	50.5	170	299	299	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall002_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 2:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174235-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.887	0.726	0.720	0.720	pCi/L		U	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174235-2

Client Project/Site: Routine Outfalls 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/23/2017 10:39:06 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/23/2017 10:39:06 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174235-1	Outfall002_20170121_Comp	Water	01/21/17 14:00	01/22/17 16:15

- 1
- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Job ID: 440-174235-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174235-2

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 3.1° C, 3.4° C, 3.9° C and 4.4° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-292256:

The gross alpha matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the lower control limit of 60% (56% and 59%). Sample matrix interference is suspected because the associated gross alpha laboratory control sample (LCS) recovery is within acceptance limits. The data have been qualified and reported.

Outfall002_20170121_Comp (440-174235-1), (LCS 160-292256/2-A), (LCSB 160-292256/3-A), (MB 160-292256/1-A), (440-174317-Q-1-K), (440-174317-Q-1-L MS), (440-174317-Q-1-N MSB), (440-174317-Q-1-O MSB) and (440-174317-Q-1-M MSD)

Method(s) 903.0: Radium-226 Prep Batch 160-290058:

The radium-226 detection goal was not met for the following samples due to the reduced sample volume attributed to the presence of matrix interferences (see prep NCM 103184 and 103185): Outfall002_20170121_Comp (440-174235-1). Analytical results are reported with the detection limit achieved.

Method(s) 904.0: Radium-228 Batch 290115:

The radium-228 detection goal was not met for the following samples due to a reduced aliquot, which can be attributed to the presence of matrix interferences (reference NCM 103187 and 103186): Outfall002_20170121_Comp (440-174235-1). Analytical results are reported with the detection limit achieved.

Method(s) PrecSep_0: Radium-228 Prep Batch 160-290115:

The following samples were prepared at a reduced aliquot due to excessive sediment and brown discoloration. Outfall002_20170121_Comp (440-174235-1).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-290058:

The following samples were prepared at a reduced aliquot due to excessive sediment and brown discoloration. Outfall002_20170121_Comp (440-174235-1).

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences. Outfall002_20170121_Comp (440-174235-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	5.27		1.73	1.83	3.00	1.83	pCi/L	02/14/17 10:22	02/20/17 21:38	1
Gross Beta	9.34		1.25	1.56	4.00	1.22	pCi/L	02/14/17 10:22	02/20/17 21:38	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-4.06	U	9.98	9.99	20.0	17.1	pCi/L	01/26/17 14:59	01/26/17 16:13	1
Potassium-40	-77.3	U	118	119		193	pCi/L	01/26/17 14:59	01/26/17 16:13	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.517	U G	0.979	0.980	1.00	2.18	pCi/L	01/30/17 10:23	02/21/17 21:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	59.6		40 - 110					01/30/17 10:23	02/21/17 21:05	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.13	U G	1.62	1.63	1.00	2.55	pCi/L	01/30/17 13:37	02/20/17 11:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	59.6		40 - 110					01/30/17 13:37	02/20/17 11:19	1
Y Carrier	83.4		40 - 110					01/30/17 13:37	02/20/17 11:19	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.106	U	0.322	0.322	3.00	0.557	pCi/L	01/31/17 11:55	02/13/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.1		40 - 110					01/31/17 11:55	02/13/17 17:08	1
Y Carrier	97.2		40 - 110					01/31/17 11:55	02/13/17 17:08	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	50.5	U	170	170	500	299	pCi/L	02/21/17 12:33	02/22/17 00:49	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.887		0.724	0.726	1.00	0.720	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.7		30 - 110					02/01/17 09:37	02/14/17 15:44	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Client Sample ID: Outfall002_20170121_Comp

Lab Sample ID: 440-174235-1

Date Collected: 01/21/17 14:00

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292256	02/14/17 10:22	MRB	TAL SL
Total/NA	Analysis	900.0		1			293387	02/20/17 21:38	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289211	01/26/17 16:13	CDR	TAL SL
Total/NA	Prep	PrecSep-21			250.18 mL	1.0 g	290058	01/30/17 10:23	AS	TAL SL
Total/NA	Analysis	903.0		1			293679	02/21/17 21:05	RTM	TAL SL
Total/NA	Prep	PrecSep_0			250.18 mL	1.0 g	290115	01/30/17 13:37	AS	TAL SL
Total/NA	Analysis	904.0		1			293387	02/20/17 11:19	RTM	TAL SL
Total/NA	Prep	PrecSep-7			502.82 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:08	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/22/17 00:49	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.00 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292516	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292256/1-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292256

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.9375		0.646	0.654	3.00	0.930	pCi/L	02/14/17 10:22	02/20/17 06:20	1
Gross Beta	0.7595	U	0.541	0.546	4.00	0.814	pCi/L	02/14/17 10:22	02/20/17 06:20	1

Lab Sample ID: LCS 160-292256/2-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.84		6.18	3.00	1.76	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-292256/3-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.1	88.28		9.35	4.00	0.832	pCi/L	97	75 - 125

Lab Sample ID: 440-174317-Q-1-L MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	1.10	U	49.9	28.11	F1	4.52	3.00	1.67	pCi/L	56	60 - 140

Lab Sample ID: 440-174317-Q-1-M MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	1.10	U	49.9	29.64	F1	4.89	3.00	1.70	pCi/L	59	60 - 140	0.16	1

Lab Sample ID: 440-174317-Q-1-N MSBT
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	3.67		91.1	89.43		9.48	4.00	1.08	pCi/L	94	60 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174317-Q-1-O MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	3.67		91.1	87.05		9.23	4.00	1.10	pCi/L	92	60 - 140	0.13	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-AK-1-B DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L	0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L	0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290058/1-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05389	U	0.113	0.113	1.00	0.282	pCi/L	01/30/17 10:23	02/21/17 20:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					01/30/17 10:23	02/21/17 20:55	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290058/2-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	7.329		1.04	1.00	0.310	pCi/L	122	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	84.1		40 - 110							

Lab Sample ID: 440-174317-F-1-C MS
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.177	U	6.01	7.673		1.11	1.00	0.362	pCi/L	128	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	86.4		40 - 110								

Lab Sample ID: 440-174317-F-1-D MSD
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.177	U	6.01	7.775		1.24	1.00	0.541	pCi/L	129	75 - 138	0.04	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	61.1		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290115/1-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290115

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-228	0.1504	U	0.263	0.264	1.00	0.447	pCi/L	01/30/17 13:37	02/20/17 11:17	1	
Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac					
Ba Carrier	83.8		40 - 110	01/30/17 13:37	02/20/17 11:17	1					
Y Carrier	82.6		40 - 110	01/30/17 13:37	02/20/17 11:17	1					

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-290115/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.70		1.82	1.00	0.428	pCi/L	121	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	84.1		40 - 110						
Y Carrier	81.5		40 - 110						

Lab Sample ID: 440-174317-F-1-E MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.179	U	13.8	15.35		1.68	1.00	0.426	pCi/L	111	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	86.4		40 - 110								
Y Carrier	84.1		40 - 110								

Lab Sample ID: 440-174317-F-1-F MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.179	U	13.8	17.08		1.95	1.00	0.616	pCi/L	123	45 - 150	0.48	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	61.1		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110								01/31/17 11:55	02/13/17 15:14	1
Y Carrier	98.7		40 - 110								01/31/17 11:55	02/13/17 15:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-O-1-B MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-O-1-C MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65 - 146		
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	78.6		30 - 110										

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146	0.04	1
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143	0.29	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	84.1		30 - 110										

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146		
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	78.6		30 - 110										

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146	0.22	1
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143	0.35	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	86.7		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-AK-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	PrecSep-21	
MB 160-290058/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290058/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174317-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-174317-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 290115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	PrecSep_0	
MB 160-290115/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290115/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174317-F-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-174317-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	Evaporation	
MB 160-292256/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292256/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292256/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174317-Q-1-L MS	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-174317-Q-1-N MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-O MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174235-1	Outfall002_20170121_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

2 of 2
4 of 5

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 002 Comp	
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)	
Sampler: BARGAN BENSON		Cyanide Total Dissolved Metals: Cu, Pb, Cd, Se, Zn Gross Alpha (900.0), Gross Beta (900.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1) Chronic Toxicity - Selenium Total Dissolved Metals: Mercury (245.1)	
Sample Description Outfall002_20170120_Comp_F Outfall002_20170120_Comp	Sample I.D. Outfall002_20170120_Comp_F Outfall002_20170120_Comp	Sampling Date/Time 1/20/2017 15:00 1/20/2017 18:00	Sample Matrix WM WM WM WM WM
Container Type 1L Poly borosilicate vials 500 mL Poly 2.5 Gal Cube 1L Glass Amber 1 Gal Cube		# of Cont. 1 1 1 1 6	Preservative None None NaOH None None
Bottle # 200 320 220 225 230 235		MS/MSD No No No No No No	Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Only test if first or second rain events of the year

ANALYSIS REQUIRED

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Relinquished By BARKER Date/Time: 1/27/17 15:00	Received By [Signature] Date/Time: 1/27/17 15:00	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By From Walk-In Fridge Date/Time: 1/27/17 18:00	Received By [Signature] Date/Time: 1/27/17 18:00	Sample Integrity: (Check) Intact: _____ On Ice: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: _____

3.2/3.4
 3.1/3.4
 2.5/3.1



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174235-2

Login Number: 174235

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174235-2

Login Number: 174235

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/24/17 03:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174235-1	Outfall002_20170121_Comp	59.6
440-174317-F-1-C MS	Matrix Spike	86.4
440-174317-F-1-D MSD	Matrix Spike Duplicate	61.1
LCS 160-290058/2-A	Lab Control Sample	84.1
MB 160-290058/1-A	Method Blank	83.8

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174235-1	Outfall002_20170121_Comp	59.6	83.4
440-174317-F-1-E MS	Matrix Spike	86.4	84.1
440-174317-F-1-F MSD	Matrix Spike Duplicate	61.1	83.0
LCS 160-290115/2-A	Lab Control Sample	84.1	81.5
MB 160-290115/1-A	Method Blank	83.8	82.6

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174110-G-1-E MS	Matrix Spike	84.4	98.3
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9
440-174235-1	Outfall002_20170121_Comp	82.1	97.2
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-F-1-E MS	Matrix Spike	78.6
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1
440-174235-1	Outfall002_20170121_Comp	73.7

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfalls 002 Comp

TestAmerica Job ID: 440-174235-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174239-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-174239-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170122_Grab	440-174239-1	N/A	Water	1/22/2017 10:30:00 AM	E120.1, E1664, E624, SM2540F, SM9221F, SW8015D/V



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174239-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issues were noted:

- A time of collection was not indicated on the COC; however, the sample labels did indicate a collection time. The samples were logged per the sample labels.
- No sample volume was received for human bacteroides. The human bacteroides sample container was marked as a temperature blank. Human bacteroides analysis was not logged.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 8015B— PURGEABLE AND EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS (TPHs)

L. Calvin of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Total Fuel Hydrocarbons (DVP-8, Rev. 0)*, EPA Method 8015B, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The preserved water sample was analyzed within 14 days for purgeable TPH (GRO), and the water sample was extracted within seven days of collection and analyzed within 40 days of extraction for extractable TPH (DRO).

III.2. CALIBRATION

Initial calibration %RSDs were within the method control limit of $\leq 20\%$, and the ICV and CCV %Ds were within $\leq 15\%$.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits for GRO and DRO of 80-120% and 45-120%, respectively. The DRO LCS/LCSD RPD was within the control limit of $\leq 25\%$.

III.3.3. SURROGATE RECOVERY

Recoveries were within laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170122_Grab, for GRO. Recoveries and the RPD were within the laboratory control limits. Due to insufficient sample volume, MS/MSD were not performed for DRO. MEC^X evaluated method accuracy and precision for DRO based on LCS/LCSD results.

III.4. FIELD QC SAMPLES

MEC^X evaluated MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.



III.5. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory reported two total petroleum hydrocarbon ranges: C₄-C₁₂ (GRO), and C₁₃-C₂₈ (DRO). Review indicated no issues with target compound range identification.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified. Review of the raw data did not indicate calculation or transcription errors. Nondetects are valid to the reporting limit.

IV. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

IV.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

IV.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

IV.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170122_Grab, for all target compounds. Recoveries and RPDs were within the laboratory control limits.



IV.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

IV.4.1. TRIP BLANKS

Sample TB-20170122 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

IV.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

IV.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

IV.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

IV.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

IV.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 22, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F and 9221F*, *EPA methods 1664A and 120.1*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.



V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 8 hours for *E. coli*
- 28 days for specific conductance

V.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing, and biological controls were acceptable. No instrument calibration information was provided for specific conductance analysis.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to the biological method or settleable solids. The biological method negative control sample was acceptable.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

V.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM, settleable solids and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis; no sample results were qualified.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



V.5.2. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401742391

Analysis Method E120.1

Sample Name Outfall002_20170122_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/22/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	350	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall002_20170122_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/22/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	4.9	1.4	mg/L	U	U	

Analysis Method E624

Sample Name Outfall002_20170122_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/22/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	ND	2.0	1.0	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	U	
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U
Cyclohexane	N	110-82-7	ND	2.0	1.0	ug/L	U	U
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U
m,p-Xylenes	N	179601-23-1	ND	1.0	0.50	ug/L	U	U
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
o-Xylene	N	95-47-6	ND	0.50	0.25	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	U
Trifluorotrchloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SM2540F

Sample Name Outfall002_20170122_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/22/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	0.20	0.10	0.10	ml/l/hr			

Analysis Method SM9221F

Sample Name Outfall002_20170122_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/22/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	2.0	1.8	1.8	mpn/100			

Analysis Method *SW8015D*

Sample Name Outfall002_20170122_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/22/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Petroleum Hydrocarbons (C13- C28)(DRO)	N	PHC1328	ND	0.49	0.099	mg/L	U	U	

Analysis Method *SW8015V*

Sample Name Outfall002_20170122_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/22/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-174239-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
PHC as Unknown/Waste Product, Light Range C4-C12	N	PHCML	ND	0.050	0.025	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174239-1

Client Project/Site: Annual Outfall 002 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/25/2017 6:47:08 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/25/2017 6:47:08 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174239-1	Outfall002_20170122_Grab	Water	01/22/17 10:30	01/22/17 14:04
440-174239-3	TB-20170122	Water	01/22/17 10:30	01/22/17 14:04

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Job ID: 440-174239-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174239-1

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 2:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.7° C and 1.0° C.

Receipt Exceptions

COC listed MS/MSD but didn't received enough containers for 8015 DRO, test code was canceled for MS/MSD, please verify. Thank you! We did not receive Human Bacti container. Bacti container was marked as Temp blank.

Outfall002_20170122_Grab (440-174239-1)

The following samples was received at the laboratory without a sample collection time documented on the chain of custody: Outfall002_20170122_Grab (440-174239-1), Outfall002_20170122_Grab (440-174239-1[MS]), Outfall002_20170122_Grab (440-174239-1[MSD]), Outfall002_20170122_Grab_Extra (440-174239-2) and TB-20170122 (440-174239-3).

Client didn't have time Collection time for samples recorded on coc. Went ahead and used time written on containers. please confirm.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 8015B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-384521 and analytical batch 440-384637. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-386004 and analytical batch 440-386405. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this job.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Client Sample ID: Outfall002_20170122_Grab

Lab Sample ID: 440-174239-1

Date Collected: 01/22/17 10:30

Matrix: Water

Date Received: 01/22/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 21:21	1
1,1,1,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 21:21	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 21:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/26/17 10:46	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Benzene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Bromoform	ND		1.0	0.40	ug/L			01/26/17 10:46	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 10:46	1
Bromomethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Chloroethane	ND		1.0	0.40	ug/L			01/26/17 10:46	1
Chloroform	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Chloromethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/26/17 10:46	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Toluene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Trichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Cyclohexane	ND		2.0	1.0	ug/L			01/26/17 10:46	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/26/17 10:46	1
Naphthalene	ND		1.0	0.40	ug/L			01/26/17 10:46	1
o-Xylene	ND		0.50	0.25	ug/L			01/26/17 10:46	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/26/17 10:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		80 - 128		01/23/17 21:21	1
Dibromofluoromethane (Surr)	102		76 - 132		01/23/17 21:21	1
4-Bromofluorobenzene (Surr)	93		80 - 120		01/23/17 21:21	1
4-Bromofluorobenzene (Surr)	96		80 - 120		01/26/17 10:46	1
Dibromofluoromethane (Surr)	108		76 - 132		01/26/17 10:46	1
Toluene-d8 (Surr)	103		80 - 128		01/26/17 10:46	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Client Sample ID: Outfall002_20170122_Grab

Lab Sample ID: 440-174239-1

Date Collected: 01/22/17 10:30

Matrix: Water

Date Received: 01/22/17 14:04

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/31/17 12:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		65 - 140					01/31/17 12:46	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.49	0.099	mg/L		01/26/17 07:35	01/27/17 12:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	79		45 - 120				01/26/17 07:35	01/27/17 12:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.9	1.4	mg/L		02/02/17 08:54	02/03/17 14:29	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	350		1.0	1.0	umhos/cm			01/26/17 08:22	1
Settleable Solids	0.20		0.10	0.10	mL/L/Hr			01/23/17 16:11	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	2.0		1.8	1.8	MPN/100mL			01/22/17 15:07	1

Client Sample ID: TB-20170122

Lab Sample ID: 440-174239-3

Date Collected: 01/22/17 10:30

Matrix: Water

Date Received: 01/22/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/26/17 09:46	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Benzene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Bromoform	ND		1.0	0.40	ug/L			01/26/17 09:46	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 09:46	1
Bromomethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Chloroethane	ND		1.0	0.40	ug/L			01/26/17 09:46	1
Chloroform	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Chloromethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 09:46	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Client Sample ID: TB-20170122

Lab Sample ID: 440-174239-3

Date Collected: 01/22/17 10:30

Matrix: Water

Date Received: 01/22/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/26/17 09:46	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Toluene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Trichloroethene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Cyclohexane	ND		2.0	1.0	ug/L			01/26/17 09:46	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/26/17 09:46	1
Naphthalene	ND		1.0	0.40	ug/L			01/26/17 09:46	1
o-Xylene	ND		0.50	0.25	ug/L			01/26/17 09:46	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/26/17 09:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120					01/26/17 09:46	1
Dibromofluoromethane (Surr)	102		76 - 132					01/26/17 09:46	1
Toluene-d8 (Surr)	107		80 - 128					01/26/17 09:46	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Client Sample ID: Outfall002_20170122_Grab

Lab Sample ID: 440-174239-1

Date Collected: 01/22/17 10:30

Matrix: Water

Date Received: 01/22/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383923	01/23/17 21:21	WC	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	384504	01/26/17 10:46	HR	TAL IRV
Total/NA	Analysis	8015B		1	10 mL	10 mL	385442	01/31/17 12:46	JB	TAL IRV
Total/NA	Prep	3510C			1015 mL	1 mL	384521	01/26/17 07:35	L2A	TAL IRV
Total/NA	Analysis	8015B		1			384622	01/27/17 12:20	AMH	TAL IRV
Total/NA	Analysis	120.1		1			384519	01/26/17 08:22	XL	TAL IRV
Total/NA	Prep	1664A			1015 mL	1000 mL	386004	02/02/17 08:54	L2A	TAL IRV
Total/NA	Analysis	1664A		1			386405	02/03/17 14:29	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	383898	01/23/17 16:11	ST	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384605		ZEM	TAL IRV
							(Start)	01/22/17 15:07		
							(End)	01/25/17 16:15		

Client Sample ID: TB-20170122

Lab Sample ID: 440-174239-3

Date Collected: 01/22/17 10:30

Matrix: Water

Date Received: 01/22/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	384504	01/26/17 09:46	HR	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383923/4
Matrix: Water
Analysis Batch: 383923

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 20:21	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 20:21	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 20:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 128		01/23/17 20:21	1
Dibromofluoromethane (Surr)	104		76 - 132		01/23/17 20:21	1
4-Bromofluorobenzene (Surr)	91		80 - 120		01/23/17 20:21	1

Lab Sample ID: LCS 440-383923/5
Matrix: Water
Analysis Batch: 383923

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	23.5		ug/L		94	37 - 150
Acrolein	25.0	25.1		ug/L		100	10 - 145
Acrylonitrile	250	263		ug/L		105	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	104		80 - 128
Dibromofluoromethane (Surr)	103		76 - 132
4-Bromofluorobenzene (Surr)	94		80 - 120

Lab Sample ID: 440-174239-1 MS
Matrix: Water
Analysis Batch: 383923

Client Sample ID: Outfall002_20170122_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	21.9		ug/L		88	10 - 140
Acrolein	ND		25.0	24.7		ug/L		99	10 - 147
Acrylonitrile	ND		250	266		ug/L		107	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	97		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	92		80 - 120

Lab Sample ID: 440-174239-1 MSD
Matrix: Water
Analysis Batch: 383923

Client Sample ID: Outfall002_20170122_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	22.1		ug/L		88	10 - 140	1	25
Acrolein	ND		25.0	21.8		ug/L		87	10 - 147	13	40
Acrylonitrile	ND		250	262		ug/L		105	38 - 144	2	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174239-1 MSD

Matrix: Water

Analysis Batch: 383923

Client Sample ID: Outfall002_20170122_Grab

Prep Type: Total/NA

<i>Surrogate</i>	<i>MSD %Recovery</i>	<i>MSD Qualifier</i>	<i>Limits</i>
<i>Toluene-d8 (Surr)</i>	100		80 - 128
<i>Dibromofluoromethane (Surr)</i>	104		76 - 132
<i>4-Bromofluorobenzene (Surr)</i>	92		80 - 120

Lab Sample ID: MB 440-384504/4

Matrix: Water

Analysis Batch: 384504

Client Sample ID: Method Blank

Prep Type: Total/NA

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/26/17 08:37	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Benzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Bromoform	ND		1.0	0.40	ug/L			01/26/17 08:37	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 08:37	1
Bromomethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Chloroethane	ND		1.0	0.40	ug/L			01/26/17 08:37	1
Chloroform	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Chloromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/26/17 08:37	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Toluene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Trichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Cyclohexane	ND		2.0	1.0	ug/L			01/26/17 08:37	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/26/17 08:37	1
Naphthalene	ND		1.0	0.40	ug/L			01/26/17 08:37	1
o-Xylene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/26/17 08:37	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384504/4
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	98		80 - 120		01/26/17 08:37	1
Dibromofluoromethane (Surr)	104		76 - 132		01/26/17 08:37	1
Toluene-d8 (Surr)	104		80 - 128		01/26/17 08:37	1

Lab Sample ID: LCS 440-384504/5
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	25.5		ug/L		102	70 - 130
1,1,2,2-Tetrachloroethane	25.0	23.6		ug/L		95	63 - 130
1,1,2-Trichloroethane	25.0	26.1		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	24.9		ug/L		100	64 - 130
1,1-Dichloroethene	25.0	24.9		ug/L		100	70 - 130
1,2-Dichlorobenzene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichloroethane	25.0	24.9		ug/L		100	57 - 138
1,2-Dichloropropane	25.0	24.0		ug/L		96	67 - 130
1,3-Dichlorobenzene	25.0	25.3		ug/L		101	70 - 130
1,4-Dichlorobenzene	25.0	23.6		ug/L		95	70 - 130
Benzene	25.0	23.9		ug/L		96	68 - 130
Bromoform	25.0	25.8		ug/L		103	60 - 148
Bromomethane	25.0	20.2		ug/L		81	64 - 139
Carbon tetrachloride	25.0	26.3		ug/L		105	60 - 150
Chlorobenzene	25.0	23.5		ug/L		94	70 - 130
Dibromochloromethane	25.0	25.5		ug/L		102	69 - 145
Chloroethane	25.0	23.0		ug/L		92	64 - 135
Chloroform	25.0	25.2		ug/L		101	70 - 130
Chloromethane	25.0	24.4		ug/L		98	47 - 140
cis-1,3-Dichloropropene	25.0	24.7		ug/L		99	70 - 133
Bromodichloromethane	25.0	25.8		ug/L		103	70 - 132
Ethylbenzene	25.0	23.6		ug/L		94	70 - 130
Methylene Chloride	25.0	26.5		ug/L		106	52 - 130
Tetrachloroethene	25.0	25.6		ug/L		103	70 - 130
Toluene	25.0	23.8		ug/L		95	70 - 130
trans-1,2-Dichloroethene	25.0	25.6		ug/L		102	70 - 130
trans-1,3-Dichloropropene	25.0	24.1		ug/L		96	70 - 132
Trichlorofluoromethane	25.0	29.9		ug/L		120	60 - 150
Vinyl chloride	25.0	22.1		ug/L		88	59 - 133
Trichloroethene	25.0	26.4		ug/L		106	70 - 130
cis-1,2-Dichloroethene	25.0	25.6		ug/L		103	70 - 133
m,p-Xylene	25.0	24.4		ug/L		98	70 - 130
Naphthalene	25.0	25.3		ug/L		101	60 - 140
o-Xylene	25.0	25.0		ug/L		100	70 - 130
Xylenes, Total	50.0	49.4		ug/L		99	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	94		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384504/5
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

<i>Surrogate</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
<i>Dibromofluoromethane (Surr)</i>	103		76 - 132
<i>Toluene-d8 (Surr)</i>	100		80 - 128

Lab Sample ID: 440-174239-1 MS
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Outfall002_20170122_Grab
Prep Type: Total/NA

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
1,1,1-Trichloroethane	ND		25.0	26.6		ug/L		106	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	24.9		ug/L		100	63 - 130
1,1,2-Trichloroethane	ND		25.0	28.8		ug/L		115	70 - 130
1,1-Dichloroethane	ND		25.0	26.0		ug/L		104	65 - 130
1,1-Dichloroethene	ND		25.0	24.8		ug/L		99	70 - 130
1,2-Dichlorobenzene	ND		25.0	25.4		ug/L		101	70 - 130
1,2-Dichloroethane	ND		25.0	27.0		ug/L		108	56 - 146
1,2-Dichloropropane	ND		25.0	26.5		ug/L		106	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.6		ug/L		110	70 - 130
1,4-Dichlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130
Benzene	ND		25.0	25.5		ug/L		102	66 - 130
Bromoform	ND		25.0	28.3		ug/L		113	59 - 150
Bromomethane	ND		25.0	22.3		ug/L		89	62 - 131
Carbon tetrachloride	ND		25.0	27.2		ug/L		109	60 - 150
Chlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130
Dibromochloromethane	ND		25.0	28.2		ug/L		113	70 - 148
Chloroethane	ND		25.0	25.6		ug/L		103	68 - 130
Chloroform	ND		25.0	26.5		ug/L		106	70 - 130
Chloromethane	ND		25.0	26.2		ug/L		105	39 - 144
cis-1,3-Dichloropropene	ND		25.0	25.9		ug/L		103	70 - 133
Bromodichloromethane	ND		25.0	27.5		ug/L		110	70 - 138
Ethylbenzene	ND		25.0	25.0		ug/L		100	70 - 130
Methylene Chloride	ND		25.0	24.9		ug/L		100	52 - 130
Tetrachloroethene	ND		25.0	26.8		ug/L		107	70 - 137
Toluene	ND		25.0	26.0		ug/L		104	70 - 130
trans-1,2-Dichloroethene	ND		25.0	27.3		ug/L		109	70 - 130
trans-1,3-Dichloropropene	ND		25.0	26.0		ug/L		104	70 - 138
Trichlorofluoromethane	ND		25.0	32.1		ug/L		128	60 - 150
Vinyl chloride	ND		25.0	22.8		ug/L		91	50 - 137
Trichloroethene	ND		25.0	27.4		ug/L		110	70 - 130
cis-1,2-Dichloroethene	ND		25.0	27.2		ug/L		109	70 - 130
m,p-Xylene	ND		25.0	25.9		ug/L		104	70 - 133
Naphthalene	ND		25.0	27.0		ug/L		108	60 - 140
o-Xylene	ND		25.0	27.1		ug/L		109	70 - 133
Xylenes, Total	ND		50.0	53.0		ug/L		106	70 - 133

<i>Surrogate</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
<i>4-Bromofluorobenzene (Surr)</i>	95		80 - 120
<i>Dibromofluoromethane (Surr)</i>	105		76 - 132

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174239-1 MS

Matrix: Water

Analysis Batch: 384504

Client Sample ID: Outfall002_20170122_Grab

Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	103		80 - 128

Lab Sample ID: 440-174239-1 MSD

Matrix: Water

Analysis Batch: 384504

Client Sample ID: Outfall002_20170122_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	27.0		ug/L		108	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	25.4		ug/L		102	63 - 130	2	30
1,1,2-Trichloroethane	ND		25.0	29.1		ug/L		117	70 - 130	1	25
1,1-Dichloroethane	ND		25.0	26.5		ug/L		106	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	25.1		ug/L		101	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130	2	20
1,2-Dichloroethane	ND		25.0	27.5		ug/L		110	56 - 146	2	20
1,2-Dichloropropane	ND		25.0	26.1		ug/L		105	69 - 130	2	20
1,3-Dichlorobenzene	ND		25.0	27.3		ug/L		109	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	25.2		ug/L		101	70 - 130	1	20
Benzene	ND		25.0	25.6		ug/L		102	66 - 130	0	20
Bromoform	ND		25.0	29.4		ug/L		117	59 - 150	4	25
Bromomethane	ND		25.0	23.6		ug/L		94	62 - 131	5	25
Carbon tetrachloride	ND		25.0	28.0		ug/L		112	60 - 150	3	25
Chlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130	2	20
Dibromochloromethane	ND		25.0	29.4		ug/L		118	70 - 148	4	25
Chloroethane	ND		25.0	25.7		ug/L		103	68 - 130	0	25
Chloroform	ND		25.0	27.0		ug/L		108	70 - 130	2	20
Chloromethane	ND		25.0	27.2		ug/L		109	39 - 144	4	25
cis-1,3-Dichloropropene	ND		25.0	27.2		ug/L		109	70 - 133	5	20
Bromodichloromethane	ND		25.0	27.7		ug/L		111	70 - 138	1	20
Ethylbenzene	ND		25.0	26.1		ug/L		105	70 - 130	4	20
Methylene Chloride	ND		25.0	27.5		ug/L		110	52 - 130	10	20
Tetrachloroethene	ND		25.0	27.8		ug/L		111	70 - 137	4	20
Toluene	ND		25.0	26.4		ug/L		106	70 - 130	2	20
trans-1,2-Dichloroethene	ND		25.0	27.3		ug/L		109	70 - 130	0	20
trans-1,3-Dichloropropene	ND		25.0	27.2		ug/L		109	70 - 138	4	25
Trichlorofluoromethane	ND		25.0	30.6		ug/L		122	60 - 150	5	25
Vinyl chloride	ND		25.0	23.8		ug/L		95	50 - 137	5	30
Trichloroethene	ND		25.0	28.5		ug/L		114	70 - 130	4	20
cis-1,2-Dichloroethene	ND		25.0	29.1		ug/L		116	70 - 130	7	20
m,p-Xylene	ND		25.0	26.8		ug/L		107	70 - 133	3	25
Naphthalene	ND		25.0	28.4		ug/L		114	60 - 140	5	30
o-Xylene	ND		25.0	27.8		ug/L		111	70 - 133	3	20
Xylenes, Total	ND		50.0	54.6		ug/L		109	70 - 133	3	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	105		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-385442/4
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/31/17 10:32	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		65 - 140					01/31/17 10:32	1

Lab Sample ID: LCS 440-385442/3
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.800	0.762		mg/L		95	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	98		65 - 140				

Lab Sample ID: 440-174239-1 MS
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Outfall002_20170122_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		0.800	0.791		mg/L		99	65 - 140
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	108		65 - 140						

Lab Sample ID: 440-174239-1 MSD
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Outfall002_20170122_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		0.800	0.794		mg/L		99	65 - 140	0	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	110		65 - 140								

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-384521/1-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384521

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.50	0.10	mg/L		01/26/17 07:35	01/27/17 18:55	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	78		45 - 120				01/26/17 07:35	01/27/17 18:55	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 440-384521/2-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384521

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
C10-C28	1.00	0.690		mg/L		69	40 - 115
Surrogate		LCS %Recovery	LCS Qualifier				Limits
<i>n-Octacosane</i>		73					45 - 120

Lab Sample ID: LCSD 440-384521/3-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384521

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
C10-C28	1.00	0.626		mg/L		63	40 - 115	10	25
Surrogate		LCSD %Recovery	LCSD Qualifier				Limits		
<i>n-Octacosane</i>		80					45 - 120		

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-384519/3
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			01/26/17 08:22	1

Lab Sample ID: LCS 440-384519/4
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Specific Conductance	768	768		umhos/cm		100	90 - 110

Lab Sample ID: 440-174256-B-1 DU
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Specific Conductance	110		105		umhos/cm		3	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-386004/1-A
Matrix: Water
Analysis Batch: 386405

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386004

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/02/17 08:54	02/03/17 14:29	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCS 440-386004/2-A
 Matrix: Water
 Analysis Batch: 386405

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 386004

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	37.6		mg/L		94	78 - 114

Lab Sample ID: LCSD 440-386004/3-A
 Matrix: Water
 Analysis Batch: 386405

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 386004

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.6		mg/L		92	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

GC/MS VOA

Analysis Batch: 383923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	624	
MB 440-383923/4	Method Blank	Total/NA	Water	624	
LCS 440-383923/5	Lab Control Sample	Total/NA	Water	624	
440-174239-1 MS	Outfall002_20170122_Grab	Total/NA	Water	624	
440-174239-1 MSD	Outfall002_20170122_Grab	Total/NA	Water	624	

Analysis Batch: 384504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	624	
440-174239-3	TB-20170122	Total/NA	Water	624	
MB 440-384504/4	Method Blank	Total/NA	Water	624	
LCS 440-384504/5	Lab Control Sample	Total/NA	Water	624	
440-174239-1 MS	Outfall002_20170122_Grab	Total/NA	Water	624	
440-174239-1 MSD	Outfall002_20170122_Grab	Total/NA	Water	624	

GC VOA

Analysis Batch: 385442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	8015B	
MB 440-385442/4	Method Blank	Total/NA	Water	8015B	
LCS 440-385442/3	Lab Control Sample	Total/NA	Water	8015B	
440-174239-1 MS	Outfall002_20170122_Grab	Total/NA	Water	8015B	
440-174239-1 MSD	Outfall002_20170122_Grab	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 384521

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	3510C	
MB 440-384521/1-A	Method Blank	Total/NA	Water	3510C	
LCS 440-384521/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 440-384521/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 384622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	8015B	384521

Analysis Batch: 384637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-384521/1-A	Method Blank	Total/NA	Water	8015B	384521
LCS 440-384521/2-A	Lab Control Sample	Total/NA	Water	8015B	384521
LCSD 440-384521/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	384521

General Chemistry

Analysis Batch: 383898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	SM 2540F	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

General Chemistry (Continued)

Analysis Batch: 384519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	120.1	
MB 440-384519/3	Method Blank	Total/NA	Water	120.1	
LCS 440-384519/4	Lab Control Sample	Total/NA	Water	120.1	
440-174256-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 386004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	1664A	
MB 440-386004/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-386004/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-386004/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 386405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	1664A	386004
MB 440-386004/1-A	Method Blank	Total/NA	Water	1664A	386004
LCS 440-386004/2-A	Lab Control Sample	Total/NA	Water	1664A	386004
LCSD 440-386004/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	386004

Biology

Analysis Batch: 384605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174239-1	Outfall002_20170122_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Grab

TestAmerica Job ID: 440-174239-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall 001, 002, 011, 018 Outfall 002 Grab		ANALYSIS REQUIRED A A R R R R Q/Q/A A A A MST-Bacteroidales, Human E. coli (SM221) Conductivity Oil & Grease (1664-HEM) VOCs + VOCs PP + xylenes, Freon 11, Freon 113, Freon 123A, Cyclohexane, cis-1,2-DCE VOCs (624) - only A+A+2CVE 8015 - gas (GRO/C4-C12) 8015 - diesel/jet fuel (DRO (C13-C28))		Field Readings Meter serial # Time of Readings: 1015 DO 11.48 mg/L pH 7.16 pH unit Temp 79.00 F TRC 0.62 mg/L Field readings QC Checked by: <i>M. Gordon</i> Date/Time: 11/01		
Project Manager: Nancy Gardiner 619.285.7132, 658.337.4061 (cell)		Project Manager: Mark Dominick 618.350.7312, 816.599.0702 (cell)		Deliver to lab ASAP 8 hr hold time Deliver to lab ASAP 8 hr hold time. Need 1x, 10x, 100x dilutions		Comments Deliver to lab ASAP 8 hr hold time Deliver to lab ASAP 8 hr hold time. Need 1x, 10x, 100x dilutions		
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 002	Outfall002_20170122_Grab	1/22/2017	WM	125mL Sterile Poly	1	None	5	No
			WM	125mL Sterile Poly	3	Na2S2O3	10	No
			WM	1 L Glass Amber	2	HCl	15	No
			WM	40 mL VOA	9	HCl	45	Yes
			WM	40 mL VOA	9	None	55	Yes
			WM	40 mL VOA	9	HCl	60	Yes
			WM	1 L Glass Amber	6	None	65	Yes
			WM	1 L Poly	1	None	70	No
			WM	500 mL Poly	1	None	75	No
			WM	1 L Glass Amber	2	HCl	15	No
Trip Blanks	TB-20170122	1/22/2017	WM	40 mL VOA	3	HCl	45	No
			WM	40 mL VOA	3	None	55	No
			WM	500 mL Poly	1	None	75	No
WM	40 mL VOA	2	HCl	45	No			
WM	40 mL VOA	2	None	55	No			

These Samples are the Grab Portion of Outfall 002 for this storm event. Composite samples will follow and are to be added to this work order.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By: *[Signature]* Date/Time: 1/22/17/12:00
 Company: JHA ENV.

Relinquished By: *[Signature]* Date/Time: 1/22/17/12:00
 Company: JHA ENV.

Relinquished By: *[Signature]* Date/Time: 1/22/17/12:00
 Company: JHA ENV.

Received By: *[Signature]* Date/Time: 1/22/17/12:00
 Company: JHA ENV.

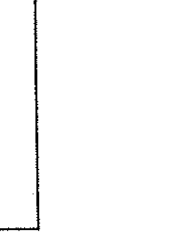
Received By: *[Signature]* Date/Time: 1/22/17/12:00
 Company: JHA ENV.

Received By: *[Signature]* Date/Time: 1/22/17/12:00
 Company: JHA ENV.

Turn-around time: (Check)
 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
 Intact: _____ On Ice: _____
 Data Requirements: (Check)
 No Level IV: _____ All Level IV: _____

0.4/0.9
 0.9/10 *[Signature]*



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174239-1

Login Number: 174239

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	False	Insufficient volume received for MS/MSD.
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174312-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174312-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170123_Comp	440-174312-1	N/A	Water	1/23/17 1:10 PM	DV-WC-0077, E1613B, E180.1, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2340, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5310B, SM5540, SW8260SIM
Outfall002_20170123_Comp_F	440-174312-2	N/A	Water	1/23/17 1:10 PM	E200.7, E200.8, E245.1, SM2340



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174312-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine and TA-Denver.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Samples for hydrazine (Method DV-WC-0077) were transferred to TA-Denver.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.

The following issue was noted:

- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall002_20170123_Comp. The result for total HPCDD was qualified as nondetected (U). The reviewer verified that peaks comprising



total HpCDF in the sample included more peaks than the method blank total. The sample result for total HpCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Total HpCDF containing an EMPC peak was qualified as estimated (J).

IV. METHODS 200.7, 200.8, 245.1 AND SM2340— METALS, MERCURY AND HARDNESS

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on March 29, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8, and 245.1*, *Standard Method 2340*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall002_20170123_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 4 days after receipt. All dissolved metals, dissolved mercury and hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170123_Comp for the ICP and ICP/MS analytes. MS/MSD analyses were not performed for dissolved sample Outfall002_20170123_Comp_F. Mercury method MS/MSD analyses were not performed for either sample in this SDG. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively, with the exception of the MSD recovery for total iron (144%). The result for total iron was qualified as estimated with high bias (J+).



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

E. Wessling of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.



V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^x evaluated method accuracy based on the LCS results.

V.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

V.7. SYSTEM PERFORMANCE

In reviewing the raw data, MECX noted that the laboratory manually integrated 4,4'-DDE and endosulfan I in all calibration levels, LCS and MS/MSD samples. The peak, which was split into two peaks on the primary column, was less than 25% resolved. Based upon professional judgement, the reviewer qualified 4,4'-DDE and endosulfan I as estimated nondetects (UJ) in the site sample, as it was unclear whether the occurrence of a single peak would cause a retention time shift or if the system would appropriately identify these target compounds.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^x reviewed the SDG on March 23, 2017



The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170123_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 28, 2017



The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with exceptions noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$, with the exception of the ICV $\%D$ of -34.2 for benzidine, and CCV $\%Ds$ for benzo(b)fluoranthene and benzo(k)fluoranthene of 20.3% and 22.2%, respectively. The sample results for benzidine, benzo(b)fluoranthene, and benzo(k)fluoranthene, all nondetects, were qualified as estimated (UJ) in sample Outfall002_20170123_Comp.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.



VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 895 milliliters was less than the nominal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHOD 8260B SIM—1,4-DIOXANE

L. Calvin of MEC^x reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 8260B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VIII.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

VIII.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRF and the ICV and continuing calibration RRFs were ≥ 0.05 for 1,4-dioxane. The initial calibration %RSD was $\leq 15\%$. The second source ICV and CCV %Ds were within the control limit of $\leq 20\%$.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compound 1,4-dioxane was not detected in the method blank.



VIII.3.2. *LABORATORY CONTROL SAMPLES*

The recovery was within the laboratory control limits.

VIII.3.3. *SURROGATE RECOVERY*

Recoveries were within the laboratory control limits.

VIII.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

VIII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VIII.4.1. *TRIP BLANKS*

A trip blank was not identified for this SDG.

VIII.4.2. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.3. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standard: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1, 218.6, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, 5310B, and 5540C, TAL-Denver hydrazine method DV-WC-0077 and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

IX.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for hydrazine analysis past the 48 hour holding time for sample filtration and acidification. The sample result for hydrazine was qualified as estimated (UJ). The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate
- 28 Days for TOC
- 24 hours for hexavalent chromium
- 36 hours for chronic toxicity
- 48 hours for BOD
- 48 hours for turbidity
- 48 hours for MBAS
- 48 hours for nitrate and nitrite as N

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

IX.3.2. LABORATORY CONTROL SAMPLES/LABORATORY CONTROL SAMPLE DUPLICATES

LCS/LCSD recoveries and RPDs were within the laboratory control limits.

IX.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IX.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE



MS/MSD analyses were not performed on a sample in this SDG.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No raw data was presented in the SDG for the turbidity, BOD, TDS and TSS analyses.

IX.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743121

Analysis Method DV-WC-0077

Sample Name Outfall002_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 1:10:00 PM Validation Level: 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Methyl hydrazine	N	60-34-4	ND	10	0.25	ug/L	UBU	UJ	H

Analysis Method E1613B

Sample Name Outfall002_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 1:10:00 PM Validation Level: 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000085	0.00010	0.00000034	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000099	0.00010	0.00000052	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000031	0.000051	0.00000027	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000096	0.000051	0.00000047	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000049	0.000051	0.00000032	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000051	0.00000050	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000051	0.00000047	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000051	0.00000048	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000051	0.00000051	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000051	0.00000034	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000051	0.00000041	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000051	0.00000044	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000051	0.00000062	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000051	0.00000038	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000051	0.00000045	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000051	0.000010	0.00000031	ug/L	J,DX	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000011	ug/L	U	U	

Analysis Method E1613B

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000048	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000070	0.000051	0.00000030	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000019	0.000051	0.00000047	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	ND	0.000051	0.00000034	ug/L	U	U	
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	ND	0.000051	0.00000041	ug/L	U	U	
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000051	0.00000044	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000051	0.00000062	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000051	0.000010	0.00000031	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000048	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	30	0.40	0.16	NTU			

Analysis Method E200.7

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Barium	T	7440-39-3	0.031	0.010	0.0050	mg/L			
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.049	0.050	0.025	mg/L	J,DX	J	DNQ
Chromium	T	7440-47-3	ND	5.0	2.5	ug/L	U	U	
Cobalt	T	7440-48-4	ND	10	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.48	0.10	0.050	mg/L		J+	Q
Manganese	T	7439-96-5	25	20	10	ug/L			
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Analysis Method E200.7**Sample Name** Outfall002_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Barium	D	7440-39-3	0.026	0.010	0.0050	mg/L	QP	J	H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Boron	D	7440-42-8	0.064	0.050	0.025	mg/L	QP	J	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Cobalt	D	7440-48-4	ND	10	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	ND	0.10	0.050	mg/L	UQP	UJ	H
Manganese	D	7439-96-5	ND	20	10	ug/L	UQP	UJ	H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.1	2.0	0.50	ug/L			
Lead	T	7439-92-1	0.66	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall002_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	1.8	2.0	0.50	ug/L	J,DXQP	J	DNQ,H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	UIB	U	

Analysis Method E245.1**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall002_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	7.0	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrate (as N)	N	14797-55-8	1.5	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.5	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	93	2.5	1.3	mg/L			

Analysis Method E314.0**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0052	0.0041	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0052	0.0031	ug/L	U	UJ	*III
4,4'-DDT	N	50-29-3	ND	0.010	0.0041	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0052	0.0016	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0052	0.0026	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.52	0.26	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.52	0.26	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.52	0.26	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.52	0.26	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.52	0.26	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.52	0.26	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.52	0.26	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.010	0.0041	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.10	0.083	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0052	0.0036	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0052	0.0021	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0052	0.0031	ug/L	U	UJ	*III
Endosulfan II	N	33213-65-9	ND	0.0052	0.0021	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.010	0.0031	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0052	0.0021	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.010	0.0021	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.010	0.0031	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.010	0.0031	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0052	0.0026	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.52	0.26	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	1.12	0.559	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.559	0.223	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	1.12	0.559	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.559	0.223	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.559	0.223	ug/L	U	U	

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2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.559	0.223	ug/L	U	U
2,4,6-Trichlorophenol	N	88-06-2	ND	1.12	0.559	ug/L	U	U
2,4-Dichlorophenol	N	120-83-2	ND	2.23	1.12	ug/L	U	U
2,4-Dimethylphenol	N	105-67-9	ND	2.23	1.12	ug/L	U	U
2,4-Dinitrophenol	N	51-28-5	ND	5.59	2.23	ug/L	U	U
2,4-Dinitrotoluene	N	121-14-2	ND	5.59	2.23	ug/L	U	U
2,6-Dinitrotoluene	N	606-20-2	ND	5.59	2.23	ug/L	U	U
2-Chloronaphthalene	N	91-58-7	ND	0.559	0.223	ug/L	U	U
2-Chlorophenol	N	95-57-8	ND	1.12	0.559	ug/L	U	U
2-Nitrophenol	N	88-75-5	ND	2.23	1.12	ug/L	U	U
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.59	2.23	ug/L	U	U
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	5.59	2.23	ug/L	U	U
4-Bromophenyl phenyl ether	N	101-55-3	ND	1.12	0.559	ug/L	U	U
4-Chloro-3-methylphenol	N	59-50-7	ND	2.23	0.223	ug/L	U	U
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.559	0.223	ug/L	U	U
4-Nitrophenol	N	100-02-7	ND	5.59	2.23	ug/L	U	U
Acenaphthene	N	83-32-9	ND	0.559	0.223	ug/L	U	U
Acenaphthylene	N	208-96-8	ND	0.559	0.223	ug/L	U	U
Anthracene	N	120-12-7	ND	0.559	0.223	ug/L	U	U
Benzidine	N	92-87-5	ND	11.2	5.59	ug/L	U	UJ C
Benzo(a)anthracene	N	56-55-3	ND	5.59	2.23	ug/L	U	U
Benzo(a)pyrene	N	50-32-8	ND	2.23	0.559	ug/L	U	U
Benzo(b)fluoranthene	N	205-99-2	ND	2.23	1.12	ug/L	U	UJ C
Benzo(g,h,i)perylene	N	191-24-2	ND	5.59	2.23	ug/L	U	U
Benzo(k)fluoranthene	N	207-08-9	ND	0.559	0.279	ug/L	U	UJ C
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.559	0.223	ug/L	U	U
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.559	0.223	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.59	2.23	ug/L	U	U
Butyl benzylphthalate	N	85-68-7	ND	5.59	2.23	ug/L	U	U
Chrysene	N	218-01-9	ND	0.559	0.223	ug/L	U	U
Dibenz(a,h)anthracene	N	53-70-3	ND	0.559	0.279	ug/L	U	U
Diethyl phthalate	N	84-66-2	ND	1.12	0.559	ug/L	U	U
Dimethyl phthalate	N	131-11-3	ND	0.559	0.279	ug/L	U	U
Di-n-butylphthalate	N	84-74-2	ND	2.23	1.12	ug/L	U	U
Di-n-octyl phthalate	N	117-84-0	ND	5.59	2.23	ug/L	U	U
Fluoranthene	N	206-44-0	ND	0.559	0.223	ug/L	U	U
Fluorene	N	86-73-7	ND	0.559	0.223	ug/L	U	U
Hexachlorobenzene	N	118-74-1	ND	1.12	0.559	ug/L	U	U
Hexachlorobutadiene	N	87-68-3	ND	2.23	0.559	ug/L	U	U
Hexachlorocyclopentadiene	N	77-47-4	ND	5.59	2.23	ug/L	U	U
Hexachloroethane	N	67-72-1	ND	3.35	0.559	ug/L	U	U
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	2.23	1.12	ug/L	U	U
Isophorone	N	78-59-1	ND	1.12	0.559	ug/L	U	U

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Naphthalene	N	91-20-3	ND	1.12	0.559	ug/L	U	U
Nitrobenzene	N	98-95-3	ND	1.12	0.559	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	2.23	1.12	ug/L	U	U
N-Nitrosodi-n-propylamine	N	621-64-7	ND	2.23	1.12	ug/L	U	U
N-Nitrosodiphenylamine	N	86-30-6	ND	1.12	0.559	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	2.23	1.12	ug/L	U	U
Phenanthrene	N	85-01-8	ND	0.559	0.223	ug/L	U	U
Phenol	N	108-95-2	ND	1.12	0.559	ug/L	U	U
Pyrene	N	129-00-0	ND	0.559	0.223	ug/L	U	U

Analysis Method SM2340**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	110	0.33	0.17	mg/L			

Sample Name Outfall002_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	110	0.33	0.17	mg/L		J	H

Analysis Method SM2540C**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	220	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 1:10:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	31	5.0	2.5	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method SM5210B

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	BOD		1.6	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method SM5310B

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	9.7	1.0	0.65	mg/L			

Analysis Method SM5540

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.13	0.10	0.050	mg/L			

Analysis Method *SW8260SIM*

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,4-Dioxane	N	123-91-1	ND	2.0	0.50	ug/L	U	U	

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ANALYTICAL REPORT

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/19/2017 4:59:03 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174312-1	Outfall002_20170123_Comp	Water	01/23/17 13:10	01/23/17 15:50
440-174312-2	Outfall002_20170123_Comp_F	Water	01/23/17 13:10	01/23/17 15:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Job ID: 440-174312-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174312-1

Comments

No additional comments.

Receipt

The samples were received on 1/23/2017 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 2.0° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-384955 recovered above the upper control limit for benzo(b)fluoranthene and benzo(k)fluoranthene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries of 3,3'-dichlorobenzidine for preparation batch 440-384349 and analytical batch 440-384955 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision of 1,2-diphenylhydrazine for preparation batch 440-384349 and analytical batch 440-384955 was greater than 50% and outside control limits. Sample matrix interference is suspected.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recovery for benzidine of preparation batch 440-384349 and analytical batch 440-385461 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 218.6: The continuing calibration verification (CCV) associated with batch 440-383776 recovered above the upper control limit for hexavalent chromium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Extraction technician missed adding surrogate to the Laboratory Control Sample (LCS) associated with batch preparation batch 440-384080 and analytical batch 440-384312. Surrogate recovery was within acceptance limits in Method Blank, Matrix Spike and Matrix Spike Duplicate and samples. Spike recovery was within limits for the LCS. Data not impacted. (LCS 440-384080/5-B)

Method(s) 608: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-384080 and analytical batch 440-384572 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Job ID: 440-174312-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 200.7 Rev 4.4: The matrix spike duplicate recoveries for preparation batch 440-385849 and analytical batch 440-386341 were outside control limits for Iron. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.(440-174312-A-1-E MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) Filtration: The following sample was prepared outside of preparation holding time due to logistical challenges of shipping the samples from Irvine to Denver such that the samples arrived in Denver outside of the preservation holding time: Outfall002_20170123_Comp (440-174312-1). Hydrazines by IC, DV-WC-0077, preparation batch 280-360047.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 625: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 8270 LL 3520 preparation/analysis: Outfall002_20170123_Comp (440-174312-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/26/17 01:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	97		80 - 120					01/26/17 01:11	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Acenaphthylene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Anthracene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Benzidine	ND		11.2	5.59	ug/L		01/25/17 13:07	01/31/17 20:02	1
Benzo[a]anthracene	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
Benzo[b]fluoranthene	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
Benzo[k]fluoranthene	ND		0.559	0.279	ug/L		01/25/17 13:07	01/28/17 13:30	1
Benzo[a]pyrene	ND		2.23	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Bis(2-chloroethoxy)methane	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Bis(2-chloroethyl)ether	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Bis(2-ethylhexyl) phthalate	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
4-Bromophenyl phenyl ether	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Butyl benzyl phthalate	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
4-Chloro-3-methylphenol	ND		2.23	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
2-Chloronaphthalene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
2-Chlorophenol	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
4-Chlorophenyl phenyl ether	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Chrysene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Dibenz(a,h)anthracene	ND		0.559	0.279	ug/L		01/25/17 13:07	01/28/17 13:30	1
Di-n-butyl phthalate	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
1,2-Dichlorobenzene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
1,3-Dichlorobenzene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
1,4-Dichlorobenzene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
3,3'-Dichlorobenzidine	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
2,4-Dichlorophenol	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
Diethyl phthalate	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
2,4-Dimethylphenol	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
Dimethyl phthalate	ND		0.559	0.279	ug/L		01/25/17 13:07	01/28/17 13:30	1
4,6-Dinitro-2-methylphenol	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
2,4-Dinitrophenol	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
2,4-Dinitrotoluene	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
2,6-Dinitrotoluene	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
Di-n-octyl phthalate	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Fluoranthene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Fluorene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Hexachlorobenzene	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Hexachlorobutadiene	ND		2.23	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Hexachloroethane	ND		3.35	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Hexachlorocyclopentadiene	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
Indeno[1,2,3-cd]pyrene	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
Isophorone	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Nitrobenzene	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
2-Nitrophenol	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
4-Nitrophenol	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
N-Nitrosodimethylamine	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
N-Nitrosodiphenylamine	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
N-Nitrosodi-n-propylamine	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
Pentachlorophenol	ND		2.23	1.12	ug/L		01/25/17 13:07	01/28/17 13:30	1
Phenanthrene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Phenol	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Pyrene	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
1,2,4-Trichlorobenzene	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
2,4,6-Trichlorophenol	ND		1.12	0.559	ug/L		01/25/17 13:07	01/28/17 13:30	1
Benzo[g,h,i]perylene	ND		5.59	2.23	ug/L		01/25/17 13:07	01/28/17 13:30	1
bis (2-chloroisopropyl) ether	ND		0.559	0.223	ug/L		01/25/17 13:07	01/28/17 13:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	65		50 - 120				01/25/17 13:07	01/28/17 13:30	1
2-Fluorophenol	61		30 - 120				01/25/17 13:07	01/28/17 13:30	1
2,4,6-Tribromophenol	70		40 - 120				01/25/17 13:07	01/28/17 13:30	1
Nitrobenzene-d5	65		45 - 120				01/25/17 13:07	01/28/17 13:30	1
Terphenyl-d14	54		37 - 144				01/25/17 13:07	01/28/17 13:30	1
Phenol-d6	63		35 - 120				01/25/17 13:07	01/28/17 13:30	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Aroclor 1221	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Aroclor 1232	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Aroclor 1242	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Aroclor 1248	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Aroclor 1254	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Aroclor 1260	ND		0.52	0.26	ug/L		01/24/17 12:17	01/25/17 17:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	73		29 - 115				01/24/17 12:17	01/25/17 17:08	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0052	0.0016	ug/L		01/24/17 12:17	01/26/17 14:36	1
alpha-BHC	ND		0.0052	0.0026	ug/L		01/24/17 12:17	01/26/17 14:36	1
beta-BHC	ND		0.010	0.0041	ug/L		01/24/17 12:17	01/26/17 14:36	1
Chlordane (technical)	ND		0.10	0.083	ug/L		01/24/17 12:17	01/26/17 14:36	1
delta-BHC	ND		0.0052	0.0036	ug/L		01/24/17 12:17	01/26/17 14:36	1
Dieldrin	ND		0.0052	0.0021	ug/L		01/24/17 12:17	01/26/17 14:36	1
Endosulfan I	ND		0.0052	0.0031	ug/L		01/24/17 12:17	01/26/17 14:36	1
Endosulfan II	ND		0.0052	0.0021	ug/L		01/24/17 12:17	01/26/17 14:36	1
Endosulfan sulfate	ND		0.010	0.0031	ug/L		01/24/17 12:17	01/26/17 14:36	1
Endrin	ND		0.0052	0.0021	ug/L		01/24/17 12:17	01/26/17 14:36	1
Endrin aldehyde	ND		0.010	0.0021	ug/L		01/24/17 12:17	01/26/17 14:36	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.010	0.0031	ug/L		01/24/17 12:17	01/26/17 14:36	1
Heptachlor	ND		0.010	0.0031	ug/L		01/24/17 12:17	01/26/17 14:36	1
Heptachlor epoxide	ND		0.0052	0.0026	ug/L		01/24/17 12:17	01/26/17 14:36	1
Toxaphene	ND		0.52	0.26	ug/L		01/24/17 12:17	01/26/17 14:36	1
4,4'-DDD	ND		0.0052	0.0041	ug/L		01/24/17 12:17	01/26/17 14:36	1
4,4'-DDE	ND		0.0052	0.0031	ug/L		01/24/17 12:17	01/26/17 14:36	1
4,4'-DDT	ND		0.010	0.0041	ug/L		01/24/17 12:17	01/26/17 14:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	36		10 - 150	01/24/17 12:17	01/26/17 14:36	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND	IB	1.0	0.25	ug/L			01/23/17 19:19	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.0		0.50	0.25	mg/L			01/23/17 18:51	1
Nitrate as N	1.5		0.11	0.055	mg/L			01/23/17 18:51	1
Fluoride	ND		0.50	0.25	mg/L			01/23/17 18:51	1
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 18:51	1
Sulfate	93		2.5	1.3	mg/L			01/23/17 19:06	5

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/30/17 09:49	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.5		0.15	0.070	mg/L			01/31/17 14:08	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,7,8-PeCDD	ND		0.000051	0.0000006	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,7,8-PeCDF	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
2,3,4,7,8-PeCDF	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,4,7,8-HxCDD	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,6,7,8-HxCDD	ND		0.000051	0.0000005	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,7,8,9-HxCDD	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,4,7,8-HxCDF	ND		0.000051	0.0000005	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,6,7,8-HxCDF	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,7,8,9-HxCDF	ND		0.000051	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	ND		0.000051	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,4,6,7,8-HpCDD	0.0000096	J,DX MB	0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,4,6,7,8-HpCDF	0.0000031	J,DX MB	0.000051	0.0000002	ug/L		01/26/17 12:45	01/28/17 12:06	1
1,2,3,4,7,8,9-HpCDF	0.0000049	J,DX q MB	0.000051	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1
OCDD	0.000099	J,DX MB	0.00010	0.0000005	ug/L		01/26/17 12:45	01/28/17 12:06	1
OCDF	0.0000085	J,DX MB	0.00010	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total TCDD	ND		0.000010	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total TCDF	0.00000051	J,DX	0.000010	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total PeCDD	ND		0.000051	0.0000006	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total PeCDF	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total HxCDD	ND		0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total HxCDF	ND		0.000051	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total HpCDD	0.000019	J,DX MB	0.000051	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:06	1
Total HpCDF	0.0000070	J,DX q MB	0.000051	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	73		25 - 164	01/26/17 12:45	01/28/17 12:06	1
13C-2,3,7,8-TCDF	64		24 - 169	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,7,8-PeCDD	79		25 - 181	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	01/26/17 12:45	01/28/17 12:06	1
13C-2,3,4,7,8-PeCDF	75		21 - 178	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,6,7,8-HxCDD	76		28 - 130	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,4,7,8-HxCDF	72		26 - 152	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	01/26/17 12:45	01/28/17 12:06	1
13C-2,3,4,6,7,8-HxCDF	68		28 - 136	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,4,6,7,8-HpCDD	91		23 - 140	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,4,6,7,8-HpCDF	78		28 - 143	01/26/17 12:45	01/28/17 12:06	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138	01/26/17 12:45	01/28/17 12:06	1
13C-OCDD	107		17 - 157	01/26/17 12:45	01/28/17 12:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/26/17 12:45	01/28/17 12:06	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000011	ug/L		01/26/17 12:45	01/30/17 19:42	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 12:45	01/30/17 19:42	1			

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197	01/26/17 12:45	01/30/17 19:42	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/01/17 17:08	02/03/17 08:48	1
Boron	0.049	J,DX	0.050	0.025	mg/L		02/01/17 17:08	02/03/17 08:48	1
Barium	0.031		0.010	0.0050	mg/L		02/01/17 17:08	02/03/17 08:48	1
Beryllium	ND		2.0	1.0	ug/L		02/01/17 17:08	02/03/17 08:48	1
Cobalt	ND		10	2.5	ug/L		02/01/17 17:08	02/03/17 08:48	1
Chromium	ND		5.0	2.5	ug/L		02/01/17 17:08	02/03/17 08:48	1
Iron	0.48		0.10	0.050	mg/L		02/01/17 17:08	02/03/17 08:48	1
Manganese	25		20	10	ug/L		02/01/17 17:08	02/03/17 08:48	1
Nickel	ND		10	5.0	ug/L		02/01/17 17:08	02/03/17 08:48	1
Vanadium	ND		10	5.0	ug/L		02/01/17 17:08	02/03/17 08:48	1
Zinc	ND		20	10	ug/L		02/01/17 17:08	02/03/17 08:48	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/01/17 17:12	02/03/17 10:38	1
Copper	2.1		2.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:38	1
Lead	0.66	J,DX	1.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:38	1
Antimony	ND		2.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:38	1
Selenium	ND		2.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:38	1
Thallium	ND		1.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:38	1
Silver	ND		1.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:38	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:43	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	110		0.33	0.17	mg/L			02/06/17 17:26	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	30		0.40	0.16	NTU			01/24/17 13:01	4
Monomethyl Hydrazine	ND	BU	10	0.25	ug/L		01/25/17 20:22	02/04/17 03:05	1
Total Dissolved Solids	220		10	5.0	mg/L			01/26/17 08:19	1
Total Suspended Solids	31		5.0	2.5	mg/L			01/27/17 13:54	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1
Ammonia (as N)	ND		0.200	0.100	mg/L			01/26/17 23:27	1
Total Organic Carbon	9.7		1.0	0.65	mg/L			01/24/17 13:47	1
Methylene Blue Active Substances	0.13		0.10	0.050	mg/L			01/23/17 21:55	1
Biochemical Oxygen Demand	1.6	J,DX	2.0	0.50	mg/L			01/23/17 17:19	1

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp_F

Lab Sample ID: 440-174312-2

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		01/31/17 16:30	02/02/17 10:35	1
Boron	0.064	QP	0.050	0.025	mg/L		01/31/17 16:30	02/02/17 10:35	1
Barium	0.026	QP	0.010	0.0050	mg/L		01/31/17 16:30	02/02/17 10:35	1
Beryllium	ND	QP	2.0	1.0	ug/L		01/31/17 16:30	02/02/17 10:35	1
Cobalt	ND	QP	10	2.5	ug/L		01/31/17 16:30	02/02/17 10:35	1
Chromium	ND	QP	5.0	2.5	ug/L		01/31/17 16:30	02/02/17 10:35	1
Iron	ND	QP	0.10	0.050	mg/L		01/31/17 16:30	02/02/17 10:35	1
Manganese	ND	QP	20	10	ug/L		01/31/17 16:30	02/02/17 10:35	1
Nickel	ND	QP	10	5.0	ug/L		01/31/17 16:30	02/02/17 10:35	1
Vanadium	ND	QP	10	5.0	ug/L		01/31/17 16:30	02/02/17 10:35	1
Zinc	ND	QP	20	10	ug/L		01/31/17 16:30	02/02/17 10:35	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/31/17 16:32	02/02/17 11:33	1
Copper	1.8	J,DX QP	2.0	0.50	ug/L		01/31/17 16:32	02/04/17 15:52	1
Lead	ND	QP	1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:33	1
Antimony	ND	QP	2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:33	1
Selenium	ND	QP	2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:33	1
Thallium	ND	QP	1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:33	1
Silver	ND	QP	1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:33	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:49	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	110		0.33	0.17	mg/L			02/06/17 01:36	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method	Method Description	Protocol	Laboratory
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
DV-WC-0077	Hydrazine, Ion Chromatography	TAL-DEN	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	10 mL	10 mL	384472	01/26/17 01:11	GK	TAL IRV
Total/NA	Prep	625			895 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			384955	01/28/17 13:30	DF	TAL IRV
Total/NA	Prep	625			895 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			385461	01/31/17 20:02	DF	TAL IRV
Total/NA	Prep	608			965 mL	2 mL	384080	01/24/17 12:17	JC1	TAL IRV
Total/NA	Analysis	608 PCB LL		1			384312	01/25/17 17:08	JM	TAL IRV
Total/NA	Prep	608			965 mL	2 mL	384080	01/24/17 12:17	JC1	TAL IRV
Total/NA	Analysis	608 Pesticides		1			384572	01/26/17 14:36	KS	TAL IRV
Total/NA	Analysis	218.6		1			383776	01/23/17 19:19	MN	TAL IRV
Total/NA	Analysis	300.0		1			383771	01/23/17 18:51	NTN	TAL IRV
Total/NA	Analysis	300.0		1			383772	01/23/17 18:51	NTN	TAL IRV
Total/NA	Analysis	300.0		5			383772	01/23/17 19:06	NTN	TAL IRV
Total/NA	Analysis	314.0		1			385114	01/30/17 09:49	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385517	01/31/17 14:08	NN	TAL IRV
Total/NA	Prep	1613B			977.7 mL	20 uL	147877	01/26/17 12:45	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 12:06	SMA	TAL SAC
Total/NA	Prep	1613B	RA		977.7 mL	20 uL	147877	01/26/17 12:45	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 19:42	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	385849	02/01/17 17:08	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			386341	02/03/17 08:48	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	385851	02/01/17 17:12	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			386384	02/03/17 10:38	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384111	01/24/17 14:19	DB	TAL IRV
Total/NA	Analysis	245.1		1			384220	01/24/17 21:43	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			386100	02/06/17 17:26	A1S	TAL IRV
Total/NA	Analysis	180.1		4			384088	01/24/17 13:01	ST	TAL IRV
Total/NA	Prep	Filtration			30 mL	30 mL	360047	01/25/17 20:22	MPS	TAL DEN
Total/NA	Analysis	DV-WC-0077		1	4.5 mL	5 mL	361024	02/04/17 03:05	MPS	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384516	01/26/17 08:19	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	384905	01/27/17 13:54	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	384650	01/26/17 15:00	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384744	01/26/17 20:29	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	384765	01/26/17 23:27	EN	TAL IRV
Total/NA	Analysis	SM 5310B		1			384224	01/24/17 13:47	YZ	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	383953	01/23/17 21:55	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			383902	01/23/17 17:19	MMP	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Client Sample ID: Outfall002_20170123_Comp_F

Lab Sample ID: 440-174312-2

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385576	01/31/17 16:30	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			386053	02/02/17 10:35	VS	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385577	01/31/17 16:32	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386210	02/02/17 11:33	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385577	01/31/17 16:32	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386564	02/04/17 15:52	RC	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	384941	01/27/17 16:45	DB	TAL IRV
Dissolved	Analysis	245.1		1			385549	01/31/17 14:49	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			386100	02/06/17 01:36	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384472/2
Matrix: Water
Analysis Batch: 384472

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/25/17 22:06	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	98		80 - 120					01/25/17 22:06	1

Lab Sample ID: LCS 440-384472/3
Matrix: Water
Analysis Batch: 384472

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	10.4		ug/L		104	70 - 125
Surrogate	%Recovery	LCS Qualifier	Limits				
Dibromofluoromethane (Surr)	99		80 - 120				

Lab Sample ID: 440-173985-B-1 MS
Matrix: Water
Analysis Batch: 384472

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	11.9		ug/L		119	70 - 130
Surrogate	%Recovery	MS Qualifier	Limits						
Dibromofluoromethane (Surr)	97		80 - 120						

Lab Sample ID: 440-173985-B-1 MSD
Matrix: Water
Analysis Batch: 384472

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	10.8		ug/L		108	70 - 130	10	30
Surrogate	%Recovery	MSD Qualifier	Limits								
Dibromofluoromethane (Surr)	99		80 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Anthracene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Chrysene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Fluoranthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Fluorene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Isophorone	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Naphthalene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Phenanthrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Phenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pyrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		50 - 120	01/25/17 13:07	01/27/17 18:46	1
2-Fluorophenol	63		30 - 120	01/25/17 13:07	01/27/17 18:46	1
2,4,6-Tribromophenol	61		40 - 120	01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene-d5	74		45 - 120	01/25/17 13:07	01/27/17 18:46	1
Terphenyl-d14	84		37 - 144	01/25/17 13:07	01/27/17 18:46	1
Phenol-d6	60		35 - 120	01/25/17 13:07	01/27/17 18:46	1

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzdine	ND		10.0	5.00	ug/L		01/25/17 13:07	01/31/17 11:36	1

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	8.699		ug/L		87	47 - 145
Acenaphthylene	10.0	8.792		ug/L		88	33 - 145
Anthracene	10.0	9.061		ug/L		91	27 - 133
Benzo[a]anthracene	10.0	9.405		ug/L		94	33 - 143
Benzo[b]fluoranthene	10.0	10.13		ug/L		101	24 - 150
Benzo[k]fluoranthene	10.0	10.30		ug/L		103	11 - 150
Benzo[a]pyrene	10.0	9.474		ug/L		95	17 - 150
Bis(2-chloroethoxy)methane	10.0	8.683		ug/L		87	33 - 150
Bis(2-chloroethyl)ether	10.0	8.118		ug/L		81	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	9.786		ug/L		98	10 - 150
4-Bromophenyl phenyl ether	10.0	9.113		ug/L		91	53 - 127
Butyl benzyl phthalate	10.0	9.813		ug/L		98	10 - 150
4-Chloro-3-methylphenol	10.0	8.756		ug/L		88	22 - 147
2-Chloronaphthalene	10.0	8.439		ug/L		84	60 - 118
2-Chlorophenol	10.0	7.747		ug/L		77	23 - 134
4-Chlorophenyl phenyl ether	10.0	8.705		ug/L		87	25 - 150
Chrysene	10.0	9.279		ug/L		93	17 - 150
Dibenz(a,h)anthracene	10.0	8.943		ug/L		89	10 - 150
Di-n-butyl phthalate	10.0	9.604		ug/L		96	10 - 118
1,2-Dichlorobenzene	10.0	7.170		ug/L		72	32 - 129
1,3-Dichlorobenzene	10.0	7.006		ug/L		70	10 - 150
1,4-Dichlorobenzene	10.0	6.948		ug/L		69	20 - 124
3,3'-Dichlorobenzidine	10.0	7.184		ug/L		72	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	10.0	8.406		ug/L		84	39 - 135
Diethyl phthalate	10.0	9.214		ug/L		92	10 - 114
2,4-Dimethylphenol	10.0	7.287		ug/L		73	32 - 119
Dimethyl phthalate	10.0	9.256		ug/L		93	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.77		ug/L		84	10 - 150
2,4-Dinitrophenol	20.0	16.45		ug/L		82	50 - 150
2,4-Dinitrotoluene	10.0	8.982		ug/L		90	39 - 139
2,6-Dinitrotoluene	10.0	9.127		ug/L		91	50 - 150
Di-n-octyl phthalate	10.0	9.560		ug/L		96	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	9.133		ug/L		90	47 - 116
Fluoranthene	10.0	9.346		ug/L		93	26 - 137
Fluorene	10.0	8.966		ug/L		90	59 - 121
Hexachlorobenzene	10.0	8.727		ug/L		87	10 - 150
Hexachlorobutadiene	10.0	7.138		ug/L		71	24 - 116
Hexachloroethane	10.0	6.722		ug/L		67	40 - 113
Hexachlorocyclopentadiene	10.0	3.657	J,DX	ug/L		37	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	8.746		ug/L		87	10 - 150
Isophorone	10.0	8.847		ug/L		88	21 - 150
Naphthalene	10.0	7.924		ug/L		79	21 - 133
Nitrobenzene	10.0	8.346		ug/L		83	35 - 150
2-Nitrophenol	10.0	8.193		ug/L		82	29 - 150
4-Nitrophenol	20.0	17.82		ug/L		89	10 - 132
N-Nitrosodimethylamine	10.0	7.600		ug/L		76	26 - 117
N-Nitrosodiphenylamine	10.0	7.969		ug/L		80	54 - 110
N-Nitrosodi-n-propylamine	10.0	8.502		ug/L		85	10 - 150
Pentachlorophenol	20.0	17.38		ug/L		87	14 - 150
Phenanthrene	10.0	9.043		ug/L		90	54 - 120
Phenol	10.0	7.992		ug/L		80	10 - 112
Pyrene	10.0	9.129		ug/L		91	52 - 115
1,2,4-Trichlorobenzene	10.0	7.466		ug/L		75	44 - 142
2,4,6-Trichlorophenol	10.0	9.411		ug/L		94	37 - 144
Benzo[g,h,i]perylene	10.0	8.816		ug/L		88	10 - 150
bis (2-chloroisopropyl) ether	10.0	7.991		ug/L		80	47 - 103

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	84		50 - 120
2-Fluorophenol	74		30 - 120
2,4,6-Tribromophenol	91		40 - 120
Nitrobenzene-d5	83		45 - 120
Terphenyl-d14	94		37 - 144
Phenol-d6	81		35 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzidine	10.0	6.553	J,DX	ug/L		66	5 - 66

Lab Sample ID: 440-174317-R-1-C MS
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	ND		10.0	6.461		ug/L		65	47 - 145
Acenaphthylene	ND		10.0	6.521		ug/L		65	33 - 145
Anthracene	ND		10.0	6.022		ug/L		60	27 - 133
Benzo[a]anthracene	ND		10.0	7.019		ug/L		70	33 - 143
Benzo[b]fluoranthene	ND		10.0	7.517		ug/L		75	24 - 150
Benzo[k]fluoranthene	ND		10.0	7.382		ug/L		74	11 - 150
Benzo[a]pyrene	ND		10.0	6.823		ug/L		68	17 - 150
Bis(2-chloroethoxy)methane	ND		10.0	6.218		ug/L		62	33 - 150
Bis(2-chloroethyl)ether	ND		10.0	6.465		ug/L		65	12 - 150
Bis(2-ethylhexyl) phthalate	ND		10.0	7.735		ug/L		77	10 - 150
4-Bromophenyl phenyl ether	ND		10.0	6.670		ug/L		67	53 - 127
Butyl benzyl phthalate	ND		10.0	7.826		ug/L		78	10 - 150
4-Chloro-3-methylphenol	ND		10.0	6.600		ug/L		66	22 - 147
2-Chloronaphthalene	ND		10.0	6.432		ug/L		64	60 - 118
2-Chlorophenol	ND		10.0	5.663		ug/L		57	23 - 134
4-Chlorophenyl phenyl ether	ND		10.0	6.564		ug/L		66	25 - 150
Chrysene	ND		10.0	6.851		ug/L		69	17 - 150
Dibenz(a,h)anthracene	ND		10.0	6.032		ug/L		60	10 - 150
Di-n-butyl phthalate	ND		10.0	7.251		ug/L		73	10 - 118
1,2-Dichlorobenzene	ND		10.0	5.765		ug/L		58	32 - 129
1,3-Dichlorobenzene	ND		10.0	5.720		ug/L		57	10 - 150
1,4-Dichlorobenzene	ND		10.0	5.566		ug/L		56	20 - 124
3,3'-Dichlorobenzidine	ND		10.0	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		10.0	5.979		ug/L		60	39 - 135
Diethyl phthalate	ND		10.0	7.009		ug/L		70	10 - 114
2,4-Dimethylphenol	ND		10.0	6.174		ug/L		62	32 - 119
Dimethyl phthalate	ND		10.0	6.897		ug/L		69	10 - 112
4,6-Dinitro-2-methylphenol	ND		20.0	14.24		ug/L		71	10 - 150
2,4-Dinitrophenol	ND		20.0	15.24		ug/L		76	50 - 150
2,4-Dinitrotoluene	ND		10.0	6.912		ug/L		69	39 - 139
2,6-Dinitrotoluene	ND		10.0	6.879		ug/L		69	50 - 150
Di-n-octyl phthalate	ND		10.0	7.826		ug/L		78	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.1	6.353		ug/L		63	60 - 120
Fluoranthene	ND		10.0	7.125		ug/L		71	26 - 137
Fluorene	ND		10.0	6.816		ug/L		68	59 - 121
Hexachlorobenzene	ND		10.0	6.321		ug/L		63	10 - 150
Hexachlorobutadiene	ND		10.0	5.467		ug/L		55	24 - 116
Hexachloroethane	ND		10.0	5.572		ug/L		56	40 - 113
Hexachlorocyclopentadiene	ND		10.0	4.082	J,DX	ug/L		41	25 - 120
Indeno[1,2,3-cd]pyrene	ND		10.0	5.982		ug/L		60	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-R-1-C MS
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Isophorone	ND		10.0	6.855		ug/L		69		21 - 150
Naphthalene	ND		10.0	6.045		ug/L		60		21 - 133
Nitrobenzene	ND		10.0	6.732		ug/L		67		35 - 150
2-Nitrophenol	ND		10.0	6.485		ug/L		65		29 - 150
4-Nitrophenol	ND		20.0	14.00		ug/L		70		10 - 132
N-Nitrosodimethylamine	ND		10.0	6.119		ug/L		61		12 - 123
N-Nitrosodiphenylamine	ND		10.0	5.167	LN	ug/L		52		60 - 120
N-Nitrosodi-n-propylamine	ND		10.0	6.434		ug/L		64		10 - 150
Pentachlorophenol	ND		20.0	14.91		ug/L		75		14 - 150
Phenanthrene	ND		10.0	6.613		ug/L		66		54 - 120
Phenol	ND		10.0	5.573		ug/L		56		10 - 112
Pyrene	ND		10.0	6.765		ug/L		68		52 - 115
1,2,4-Trichlorobenzene	ND		10.0	5.857		ug/L		59		44 - 142
2,4,6-Trichlorophenol	ND		10.0	6.509		ug/L		65		37 - 144
Benzo[g,h,i]perylene	ND		10.0	5.616		ug/L		56		10 - 150
bis (2-chloroisopropyl) ether	ND		10.0	6.338		ug/L		63		45 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	48		30 - 120
2,4,6-Tribromophenol	68		40 - 120
Nitrobenzene-d5	63		45 - 120
Terphenyl-d14	70		37 - 144
Phenol-d6	57		35 - 120

Lab Sample ID: 440-174317-R-1-C MS
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Benzidine	ND		10.0	ND	LN	ug/L		0		30 - 160

Lab Sample ID: 440-174317-S-1-A MSD
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier								
Acenaphthene	ND		10.1	8.086		ug/L		80		47 - 145	22		25
Acenaphthylene	ND		10.1	7.781		ug/L		77		33 - 145	18		25
Anthracene	ND		10.1	7.707		ug/L		77		27 - 133	25		25
Benzo[a]anthracene	ND		10.1	8.657	BA	ug/L		86		33 - 143	21		20
Benzo[b]fluoranthene	ND		10.1	10.10	BA	ug/L		101		24 - 150	29		25
Benzo[k]fluoranthene	ND		10.1	9.323		ug/L		93		11 - 150	23		30
Benzo[a]pyrene	ND		10.1	8.451		ug/L		84		17 - 150	21		25
Bis(2-chloroethoxy)methane	ND		10.1	5.616		ug/L		56		33 - 150	10		25
Bis(2-chloroethyl)ether	ND		10.1	7.762		ug/L		77		12 - 150	18		25
Bis(2-ethylhexyl) phthalate	ND		10.1	9.202		ug/L		92		10 - 150	17		25
4-Bromophenyl phenyl ether	ND		10.1	8.593		ug/L		85		53 - 127	25		25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-S-1-A MSD

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Butyl benzyl phthalate	ND		10.1	9.372		ug/L		93	10 - 150	18	25
4-Chloro-3-methylphenol	ND		10.1	8.955	BA	ug/L		89	22 - 147	30	25
2-Chloronaphthalene	ND		10.1	7.996	BA	ug/L		80	60 - 118	22	20
2-Chlorophenol	ND		10.1	7.747	BA	ug/L		77	23 - 134	31	25
4-Chlorophenyl phenyl ether	ND		10.1	8.334		ug/L		83	25 - 150	24	25
Chrysene	ND		10.1	8.402		ug/L		84	17 - 150	20	25
Dibenz(a,h)anthracene	ND		10.1	6.518		ug/L		65	10 - 150	8	30
Di-n-butyl phthalate	ND		10.1	9.232		ug/L		92	10 - 118	24	25
1,2-Dichlorobenzene	ND		10.1	7.290		ug/L		73	32 - 129	23	25
1,3-Dichlorobenzene	ND		10.1	6.860		ug/L		68	10 - 150	18	25
1,4-Dichlorobenzene	ND		10.1	6.791		ug/L		68	20 - 124	20	25
3,3'-Dichlorobenzidine	ND		10.1	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		10.1	8.417	BA	ug/L		84	39 - 135	34	25
Diethyl phthalate	ND		10.1	9.052		ug/L		90	10 - 114	25	30
2,4-Dimethylphenol	ND		10.1	8.319	BA	ug/L		83	32 - 119	30	25
Dimethyl phthalate	ND		10.1	8.631		ug/L		86	10 - 112	22	30
4,6-Dinitro-2-methylphenol	ND		20.1	18.84	BA	ug/L		94	10 - 150	28	25
2,4-Dinitrophenol	ND		20.1	22.61	BA	ug/L		112	50 - 150	39	25
2,4-Dinitrotoluene	ND		10.1	8.934	BA	ug/L		89	39 - 139	26	25
2,6-Dinitrotoluene	ND		10.1	9.206	BA	ug/L		92	50 - 150	29	20
Di-n-octyl phthalate	ND		10.1	9.203		ug/L		92	10 - 146	16	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.2	2.243	LN BA	ug/L		22	60 - 120	96	25
Fluoranthene	ND		10.1	9.121		ug/L		91	26 - 137	25	25
Fluorene	ND		10.1	8.677		ug/L		86	59 - 121	24	25
Hexachlorobenzene	ND		10.1	8.069		ug/L		80	10 - 150	24	25
Hexachlorobutadiene	ND		10.1	6.794		ug/L		68	24 - 116	22	25
Hexachloroethane	ND		10.1	6.911		ug/L		69	40 - 113	21	25
Hexachlorocyclopentadiene	ND		10.1	5.312		ug/L		53	25 - 120	26	30
Indeno[1,2,3-cd]pyrene	ND		10.1	7.094		ug/L		71	10 - 150	17	30
Isophorone	ND		10.1	8.819		ug/L		88	21 - 150	25	25
Naphthalene	ND		10.1	7.785		ug/L		77	21 - 133	25	25
Nitrobenzene	ND		10.1	9.210	BA	ug/L		92	35 - 150	31	25
2-Nitrophenol	ND		10.1	9.106	BA	ug/L		91	29 - 150	34	25
4-Nitrophenol	ND		20.1	19.29	BA	ug/L		96	10 - 132	32	30
N-Nitrosodimethylamine	ND		10.1	7.765		ug/L		77	12 - 123	24	35
N-Nitrosodiphenylamine	ND		10.1	3.428	LN BA	ug/L		34	60 - 120	40	25
N-Nitrosodi-n-propylamine	ND		10.1	8.430	BA	ug/L		84	10 - 150	27	25
Pentachlorophenol	ND		20.1	20.39	BA	ug/L		101	14 - 150	31	25
Phenanthrene	ND		10.1	8.409		ug/L		84	54 - 120	24	25
Phenol	ND		10.1	7.344	BA	ug/L		73	10 - 112	27	25
Pyrene	ND		10.1	8.417		ug/L		84	52 - 115	22	25
1,2,4-Trichlorobenzene	ND		10.1	7.274	BA	ug/L		72	44 - 142	22	20
2,4,6-Trichlorophenol	ND		10.1	8.926	BA	ug/L		89	37 - 144	31	30
Benzo[g,h,i]perylene	ND		10.1	6.619		ug/L		66	10 - 150	16	30
bis (2-chloroisopropyl) ether	ND		10.1	7.821		ug/L		78	45 - 120	21	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-S-1-A MSD
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384349

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	80		50 - 120
2-Fluorophenol	75		30 - 120
2,4,6-Tribromophenol	92		40 - 120
Nitrobenzene-d5	81		45 - 120
Terphenyl-d14	85		37 - 144
Phenol-d6	79		35 - 120

Lab Sample ID: 440-174317-S-1-A MSD
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzidine	ND		10.1	ND	LN	ug/L		0	30 - 160	NC	35

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-384080/1-A
Matrix: Water
Analysis Batch: 384312

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384080

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	72		29 - 115	01/24/17 12:17	01/25/17 12:58	1

Lab Sample ID: LCS 440-384080/5-B
Matrix: Water
Analysis Batch: 384312

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	3.81		ug/L		95	50 - 115
Aroclor 1260	4.00	3.94		ug/L		99	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	4	LG	29 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: 440-174317-G-1-D MS

Matrix: Water
Analysis Batch: 384312

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aroclor 1016	ND		3.79	2.63		ug/L		69	45 - 120
Aroclor 1260	ND		3.79	3.42		ug/L		90	55 - 125
MS MS									
Surrogate	%Recovery		Qualifier	Limits					
DCB Decachlorobiphenyl (Surr)	46			29 - 115					

Lab Sample ID: 440-174317-R-1-B MSD

Matrix: Water
Analysis Batch: 384312

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	RPD Limit
	Result	Qualifier		Result	Qualifier						
Aroclor 1016	ND		3.81	2.60		ug/L		68	45 - 120	16	30
Aroclor 1260	ND		3.81	3.49		ug/L		92	55 - 125	3	25
MSD MSD											
Surrogate	%Recovery		Qualifier	Limits							
DCB Decachlorobiphenyl (Surr)	45			29 - 115							

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-384080/1-A

Matrix: Water
Analysis Batch: 384572

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384080

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aldrin	ND		0.0050	0.0015	ug/L		01/24/17 12:17	01/26/17 12:38	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/24/17 12:17	01/26/17 12:38	1
beta-BHC	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/24/17 12:17	01/26/17 12:38	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/24/17 12:17	01/26/17 12:38	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endrin	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Heptachlor	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/24/17 12:17	01/26/17 12:38	1
Toxaphene	ND		0.50	0.25	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
MB MB									
Surrogate	%Recovery		Qualifier	Limits		Prepared	Analyzed	Dil Fac	
Tetrachloro-m-xylene	66			10 - 150		01/24/17 12:17	01/26/17 12:38	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-384080/2-A
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.200	0.107		ug/L		53	42 - 122
alpha-BHC	0.200	0.147		ug/L		73	37 - 134
beta-BHC	0.200	0.127		ug/L		63	17 - 147
delta-BHC	0.200	0.145		ug/L		72	19 - 140
Dieldrin	0.200	0.160		ug/L		80	36 - 146
Endosulfan I	0.200	0.157		ug/L		79	45 - 150
Endosulfan II	0.200	0.158		ug/L		79	10 - 150
Endosulfan sulfate	0.200	0.158		ug/L		79	26 - 144
Endrin	0.200	0.163		ug/L		82	30 - 147
Endrin aldehyde	0.200	0.157		ug/L		78	47 - 115
gamma-BHC (Lindane)	0.200	0.161		ug/L		80	32 - 127
Heptachlor	0.200	0.157		ug/L		79	34 - 115
Heptachlor epoxide	0.200	0.172		ug/L		86	37 - 142
4,4'-DDD	0.200	0.150		ug/L		75	31 - 141
4,4'-DDE	0.200	0.149		ug/L		75	30 - 145
4,4'-DDT	0.200	0.174		ug/L		87	25 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	66		10 - 150

Lab Sample ID: 440-174317-G-1-C MSD
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aldrin	ND		0.204	0.104		ug/L		51	35 - 120	12	30
alpha-BHC	ND		0.204	0.121		ug/L		59	40 - 120	16	30
beta-BHC	ND		0.204	0.108		ug/L		53	50 - 120	15	30
delta-BHC	ND		0.204	0.113		ug/L		55	50 - 120	13	30
Dieldrin	ND		0.204	0.126		ug/L		62	50 - 120	19	30
Endosulfan I	ND		0.204	0.116		ug/L		57	50 - 120	14	30
Endosulfan II	ND		0.204	0.125		ug/L		61	50 - 125	16	30
Endosulfan sulfate	ND		0.204	0.120		ug/L		59	55 - 125	12	30
Endrin	ND		0.204	0.129		ug/L		63	50 - 120	15	30
Endrin aldehyde	ND		0.204	0.132		ug/L		65	45 - 125	19	30
gamma-BHC (Lindane)	ND		0.204	0.132		ug/L		65	40 - 120	17	30
Heptachlor	ND		0.204	0.128		ug/L		63	40 - 120	16	30
Heptachlor epoxide	ND		0.204	0.134		ug/L		66	50 - 120	15	30
4,4'-DDD	ND		0.204	0.119		ug/L		58	50 - 125	17	30
4,4'-DDE	ND		0.204	0.109		ug/L		53	45 - 125	15	30
4,4'-DDT	ND		0.204	0.133		ug/L		65	50 - 125	16	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene	54		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-174317-H-1-A MS
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384080
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aldrin	ND		0.191	0.0921		ug/L		48	35 - 120
alpha-BHC	ND		0.191	0.103		ug/L		54	40 - 120
beta-BHC	ND		0.191	0.0926	LN	ug/L		48	50 - 120
delta-BHC	ND		0.191	0.0990		ug/L		52	50 - 120
Dieldrin	ND		0.191	0.104		ug/L		54	50 - 120
Endosulfan I	ND		0.191	0.100		ug/L		52	50 - 120
Endosulfan II	ND		0.191	0.106		ug/L		56	50 - 125
Endosulfan sulfate	ND		0.191	0.106		ug/L		55	55 - 125
Endrin	ND		0.191	0.111		ug/L		58	50 - 120
Endrin aldehyde	ND		0.191	0.110		ug/L		57	45 - 125
gamma-BHC (Lindane)	ND		0.191	0.112		ug/L		58	40 - 120
Heptachlor	ND		0.191	0.109		ug/L		57	40 - 120
Heptachlor epoxide	ND		0.191	0.115		ug/L		60	50 - 120
4,4'-DDD	ND		0.191	0.100		ug/L		52	50 - 125
4,4'-DDE	ND		0.191	0.0941		ug/L		49	45 - 125
4,4'-DDT	ND		0.191	0.113		ug/L		59	50 - 125
Surrogate		MS %Recovery	MS Qualifier						Limits
Tetrachloro-m-xylene		47							10 - 150

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-383776/3
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND	IB	1.0	0.25	ug/L			01/23/17 09:50	1

Lab Sample ID: LCS 440-383776/2
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	52.4		ug/L		105	90 - 110

Lab Sample ID: MRL 440-383776/4
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.26		ug/L		126	50 - 150

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: 440-174234-K-1 MS

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND	IB	50.0	53.6	IB	ug/L		107	90 - 110

Lab Sample ID: 440-174234-K-1 MSD

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND	IB	50.0	53.9	IB	ug/L		108	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383771/4

Matrix: Water

Analysis Batch: 383771

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			01/23/17 12:06	1
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 12:06	1

Lab Sample ID: LCS 440-383771/2

Matrix: Water

Analysis Batch: 383771

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.16		mg/L		102	90 - 110
Nitrite as N	1.52	1.57		mg/L		103	90 - 110

Lab Sample ID: 440-174322-D-3 MS

Matrix: Water

Analysis Batch: 383771

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	23		11.3	34.3		mg/L		102	80 - 120
Nitrite as N	ND		15.2	15.3		mg/L		101	80 - 120

Lab Sample ID: 440-174322-D-3 MSD

Matrix: Water

Analysis Batch: 383771

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	23		11.3	33.3		mg/L		93	80 - 120	3	20
Nitrite as N	ND		15.2	14.6		mg/L		96	80 - 120	4	20

Lab Sample ID: MB 440-383772/4

Matrix: Water

Analysis Batch: 383772

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 12:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 440-383772/4
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.25	mg/L			01/23/17 12:06	1
Sulfate	ND		0.50	0.25	mg/L			01/23/17 12:06	1

Lab Sample ID: LCS 440-383772/2
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.07		mg/L		101	90 - 110
Fluoride	5.00	4.86		mg/L		97	90 - 110
Sulfate	5.00	5.24		mg/L		105	90 - 110

Lab Sample ID: 440-174322-D-3 MS
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	29		50.0	78.5		mg/L		100	80 - 120
Fluoride	ND		50.0	46.2		mg/L		92	80 - 120
Sulfate	130		50.0	183		mg/L		100	80 - 120

Lab Sample ID: 440-174322-D-3 MSD
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	29		50.0	77.6		mg/L		98	80 - 120	1	20
Fluoride	ND		50.0	45.6		mg/L		91	80 - 120	1	20
Sulfate	130		50.0	178		mg/L		91	80 - 120	2	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-385114/3
Matrix: Water
Analysis Batch: 385114

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/30/17 08:41	1

Lab Sample ID: LCS 440-385114/2
Matrix: Water
Analysis Batch: 385114

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	24.7		ug/L		99	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-385114/5
Matrix: Water
Analysis Batch: 385114

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.03		ug/L		101	75 - 125

Lab Sample ID: 440-174312-1 MS
Matrix: Water
Analysis Batch: 385114

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	28.8		ug/L		115	80 - 120

Lab Sample ID: 440-174312-1 MSD
Matrix: Water
Analysis Batch: 385114

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.8		ug/L		111	80 - 120	4	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.00000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDD	0.00000700	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-385849/1-A
Matrix: Water
Analysis Batch: 386341

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385849

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		02/01/17 17:08	02/03/17 08:43	1
Boron	ND		0.050	0.025	mg/L		02/01/17 17:08	02/03/17 08:43	1
Barium	ND		0.010	0.0050	mg/L		02/01/17 17:08	02/03/17 08:43	1
Beryllium	ND		2.0	1.0	ug/L		02/01/17 17:08	02/03/17 08:43	1
Cobalt	ND		10	2.5	ug/L		02/01/17 17:08	02/03/17 08:43	1
Chromium	ND		5.0	2.5	ug/L		02/01/17 17:08	02/03/17 08:43	1
Iron	ND		0.10	0.050	mg/L		02/01/17 17:08	02/03/17 08:43	1
Manganese	ND		20	10	ug/L		02/01/17 17:08	02/03/17 08:43	1
Nickel	ND		10	5.0	ug/L		02/01/17 17:08	02/03/17 08:43	1
Vanadium	ND		10	5.0	ug/L		02/01/17 17:08	02/03/17 08:43	1
Zinc	ND		20	10	ug/L		02/01/17 17:08	02/03/17 08:43	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-385849/2-A
Matrix: Water
Analysis Batch: 386341

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385849

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	495		ug/L		99	85 - 115
Boron	0.500	0.473		mg/L		95	85 - 115
Barium	0.500	0.502		mg/L		100	85 - 115
Beryllium	500	495		ug/L		99	85 - 115
Calcium	2.50	2.51		mg/L		101	85 - 115
Cobalt	500	511		ug/L		102	85 - 115
Chromium	500	516		ug/L		103	85 - 115
Iron	0.500	0.503		mg/L		101	85 - 115
Magnesium	2.50	2.52		mg/L		101	85 - 115
Manganese	500	520		ug/L		104	85 - 115
Nickel	500	523		ug/L		105	85 - 115
Vanadium	500	494		ug/L		99	85 - 115
Zinc	500	491		ug/L		98	85 - 115
Silver	250	227		ug/L		91	85 - 115

Lab Sample ID: 440-174312-1 MS
Matrix: Water
Analysis Batch: 386341

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385849

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		500	518		ug/L		104	70 - 130
Boron	0.049	J,DX	0.500	0.556		mg/L		101	70 - 130
Barium	0.031		0.500	0.546		mg/L		103	70 - 130
Beryllium	ND		500	516		ug/L		103	70 - 130
Calcium	33		2.50	34.9	BB	mg/L		82	70 - 130
Cobalt	ND		500	524		ug/L		105	70 - 130
Chromium	ND		500	535		ug/L		107	70 - 130
Iron	0.48		0.500	1.06		mg/L		116	70 - 130
Magnesium	6.5		2.50	9.27		mg/L		110	70 - 130
Manganese	25		500	558		ug/L		107	70 - 130
Nickel	ND		500	538		ug/L		108	70 - 130
Vanadium	ND		500	521		ug/L		104	70 - 130
Zinc	ND		500	519		ug/L		104	70 - 130
Silver	ND		250	239		ug/L		96	70 - 130

Lab Sample ID: 440-174312-1 MSD
Matrix: Water
Analysis Batch: 386341

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385849

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	ND		500	499		ug/L		100	70 - 130	4	20
Boron	0.049	J,DX	0.500	0.559		mg/L		102	70 - 130	1	20
Barium	0.031		0.500	0.545		mg/L		103	70 - 130	0	20
Beryllium	ND		500	515		ug/L		103	70 - 130	0	20
Calcium	33		2.50	35.3	BB	mg/L		100	70 - 130	1	20
Cobalt	ND		500	519		ug/L		104	70 - 130	1	20
Chromium	ND		500	511		ug/L		102	70 - 130	5	20
Iron	0.48		0.500	1.20	LM	mg/L		144	70 - 130	12	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174312-1 MSD
Matrix: Water
Analysis Batch: 386341

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385849

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Magnesium	6.5		2.50	9.50		mg/L		119	70 - 130	2	20
Manganese	25		500	559		ug/L		107	70 - 130	0	20
Nickel	ND		500	514		ug/L		103	70 - 130	4	20
Vanadium	ND		500	520		ug/L		104	70 - 130	0	20
Zinc	ND		500	521		ug/L		104	70 - 130	0	20
Silver	ND		250	239		ug/L		96	70 - 130	0	20

Lab Sample ID: MB 440-384878/1-D
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385576

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Boron	ND		0.050	0.025	mg/L		01/31/17 16:30	02/02/17 10:23	1
Barium	ND		0.010	0.0050	mg/L		01/31/17 16:30	02/02/17 10:23	1
Beryllium	ND		2.0	1.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Cobalt	ND		10	2.5	ug/L		01/31/17 16:30	02/02/17 10:23	1
Chromium	ND		5.0	2.5	ug/L		01/31/17 16:30	02/02/17 10:23	1
Iron	ND		0.10	0.050	mg/L		01/31/17 16:30	02/02/17 10:23	1
Manganese	ND		20	10	ug/L		01/31/17 16:30	02/02/17 10:23	1
Nickel	ND		10	5.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Vanadium	ND		10	5.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Zinc	11.2	J,DX	20	10	ug/L		01/31/17 16:30	02/02/17 10:23	1

Lab Sample ID: LCS 440-384878/2-D
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Arsenic	500	504		ug/L		101	85 - 115
Boron	0.500	0.482		mg/L		96	85 - 115
Barium	0.500	0.499		mg/L		100	85 - 115
Beryllium	500	498		ug/L		100	85 - 115
Calcium	2.50	2.62		mg/L		105	85 - 115
Cobalt	500	503		ug/L		101	85 - 115
Chromium	500	515		ug/L		103	85 - 115
Iron	0.500	0.518		mg/L		104	85 - 115
Magnesium	2.50	2.55		mg/L		102	85 - 115
Manganese	500	523		ug/L		105	85 - 115
Nickel	500	527		ug/L		105	85 - 115
Vanadium	500	493		ug/L		99	85 - 115
Zinc	500	499		ug/L		100	85 - 115
Silver	250	228		ug/L		91	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174317-A-2-H MS
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Sample		Spike Added	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Arsenic	ND	QP	500	530		ug/L		106	70 - 130
Boron	0.057	QP	0.500	0.555		mg/L		99	70 - 130
Barium	0.023	QP	0.500	0.526		mg/L		101	70 - 130
Beryllium	ND	QP	500	524		ug/L		105	70 - 130
Calcium	44	QP	2.50	45.0	BB	mg/L		38	70 - 130
Cobalt	ND	QP	500	513		ug/L		103	70 - 130
Chromium	ND	QP	500	529		ug/L		106	70 - 130
Iron	ND	QP	0.500	0.547		mg/L		109	70 - 130
Magnesium	5.3	MB QP	2.50	7.68		mg/L		96	70 - 130
Manganese	ND	QP	500	535		ug/L		107	70 - 130
Nickel	ND	QP	500	510		ug/L		102	70 - 130
Vanadium	ND	QP	500	510		ug/L		102	70 - 130
Zinc	63	MB QP	500	513		ug/L		90	70 - 130
Silver	ND	QP	250	234		ug/L		93	70 - 130

Lab Sample ID: 440-174317-A-2-I MSD
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Sample		Spike Added	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Arsenic	ND	QP	500	534		ug/L		107	70 - 130	1	20
Boron	0.057	QP	0.500	0.562		mg/L		101	70 - 130	1	20
Barium	0.023	QP	0.500	0.530		mg/L		101	70 - 130	1	20
Beryllium	ND	QP	500	517		ug/L		103	70 - 130	1	20
Calcium	44	QP	2.50	46.0	BB	mg/L		78	70 - 130	2	20
Cobalt	ND	QP	500	515		ug/L		103	70 - 130	0	20
Chromium	ND	QP	500	533		ug/L		107	70 - 130	1	20
Iron	ND	QP	0.500	0.548		mg/L		110	70 - 130	0	20
Magnesium	5.3	MB QP	2.50	7.90		mg/L		105	70 - 130	3	20
Manganese	ND	QP	500	538		ug/L		108	70 - 130	1	20
Nickel	ND	QP	500	514		ug/L		103	70 - 130	1	20
Vanadium	ND	QP	500	517		ug/L		103	70 - 130	1	20
Zinc	63	MB QP	500	518		ug/L		91	70 - 130	1	20
Silver	ND	QP	250	236		ug/L		94	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-385577/2-A
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Cadmium	ND		1.0	0.25	ug/L		01/31/17 16:32	02/02/17 11:21		1
Lead	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21		1
Antimony	ND		2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21		1
Selenium	ND		2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21		1
Thallium	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21		1
Silver	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21		1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-38577/2-A
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		2.0	0.50	ug/L		01/31/17 16:32	02/04/17 15:40	1

Lab Sample ID: LCS 440-38577/1-A
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	69.2		ug/L		87	85 - 115
Lead	80.0	69.5		ug/L		87	85 - 115
Antimony	80.0	80.3		ug/L		100	85 - 115
Selenium	80.0	69.9		ug/L		87	85 - 115
Thallium	80.0	70.1		ug/L		88	85 - 115
Silver	80.0	68.4		ug/L		86	85 - 115

Lab Sample ID: LCS 440-38577/1-A
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Copper	80.0	74.0		ug/L		92	85 - 115

Lab Sample ID: MB 440-385851/1-A
Matrix: Water
Analysis Batch: 386384

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385851

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/01/17 17:12	02/03/17 10:33	1
Copper	ND		2.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:33	1
Lead	ND		1.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:33	1
Antimony	ND		2.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:33	1
Selenium	ND		2.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:33	1
Thallium	ND		1.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:33	1
Silver	ND		1.0	0.50	ug/L		02/01/17 17:12	02/03/17 10:33	1

Lab Sample ID: LCS 440-385851/2-A
Matrix: Water
Analysis Batch: 386384

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385851

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	73.8		ug/L		92	85 - 115
Copper	80.0	73.9		ug/L		92	85 - 115
Lead	80.0	72.9		ug/L		91	85 - 115
Antimony	80.0	83.1		ug/L		104	85 - 115
Selenium	80.0	74.0		ug/L		93	85 - 115
Thallium	80.0	74.1		ug/L		93	85 - 115
Silver	80.0	73.4		ug/L		92	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174312-1 MS
Matrix: Water
Analysis Batch: 386384

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385851

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Cadmium	ND		80.0	78.1		ug/L		98	70 - 130	
Copper	2.1		80.0	79.8		ug/L		97	70 - 130	
Lead	0.66	J,DX	80.0	78.1		ug/L		97	70 - 130	
Antimony	ND		80.0	90.5		ug/L		113	70 - 130	
Selenium	ND		80.0	78.9		ug/L		99	70 - 130	
Thallium	ND		80.0	79.9		ug/L		100	70 - 130	
Silver	ND		80.0	78.1		ug/L		98	70 - 130	

Lab Sample ID: 440-174312-1 MSD
Matrix: Water
Analysis Batch: 386384

Client Sample ID: Outfall002_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385851

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND		80.0	75.2		ug/L		94	70 - 130	4	20
Copper	2.1		80.0	75.5		ug/L		92	70 - 130	6	20
Lead	0.66	J,DX	80.0	74.6		ug/L		92	70 - 130	5	20
Antimony	ND		80.0	84.8		ug/L		106	70 - 130	7	20
Selenium	ND		80.0	73.6		ug/L		92	70 - 130	7	20
Thallium	ND		80.0	76.1		ug/L		95	70 - 130	5	20
Silver	ND		80.0	75.0		ug/L		94	70 - 130	4	20

Lab Sample ID: 440-174317-A-2-K MS
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Cadmium	ND	QP	80.0	70.2		ug/L		88	70 - 130
Lead	ND	QP	80.0	71.5		ug/L		89	70 - 130
Antimony	ND	QP	80.0	83.6		ug/L		105	70 - 130
Selenium	ND	QP	80.0	72.4		ug/L		91	70 - 130
Thallium	ND	QP	80.0	70.8		ug/L		88	70 - 130
Silver	ND	QP	80.0	69.8		ug/L		87	70 - 130

Lab Sample ID: 440-174317-A-2-K MS
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Copper	1.8	J,DX QP	80.0	68.9		ug/L		84	70 - 130

Lab Sample ID: 440-174317-A-2-L MSD
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	71.4		ug/L		89	70 - 130	2	20
Lead	ND	QP	80.0	72.7		ug/L		91	70 - 130	2	20
Antimony	ND	QP	80.0	85.4		ug/L		107	70 - 130	2	20
Selenium	ND	QP	80.0	71.7		ug/L		90	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174317-A-2-L MSD
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Thallium	ND	QP	80.0	71.7		ug/L		90	70 - 130	1	20
Silver	ND	QP	80.0	70.8		ug/L		88	70 - 130	1	20

Lab Sample ID: 440-174317-A-2-L MSD
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Copper	1.8	J,DX QP	80.0	72.3		ug/L		88	70 - 130	5	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384111/1-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384111

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:13	1

Lab Sample ID: LCS 440-384111/2-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
		Added	Result				Qualifier
Mercury	8.00	8.11		ug/L		101	85 - 115

Lab Sample ID: 440-174317-A-1-B MS
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				Limits
Mercury	ND		8.00	7.77		ug/L		97	70 - 130

Lab Sample ID: 440-174317-A-1-C MSD
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Mercury	ND		8.00	7.82		ug/L		98	70 - 130	1	20

Lab Sample ID: MB 440-384878/1-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 384941

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-384878/2-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.63		ug/L		95	85 - 115

Lab Sample ID: 440-174317-A-2-E MS
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.36		ug/L		92	70 - 130

Lab Sample ID: 440-174317-A-2-F MSD
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	7.42		ug/L		93	70 - 130	1	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-384088/5
Matrix: Water
Analysis Batch: 384088

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			01/24/17 13:01	1

Lab Sample ID: 440-174334-A-8 DU
Matrix: Water
Analysis Batch: 384088

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	7.1		7.13		NTU		0.4	20

Method: DV-WC-0077 - Hydrazine, Ion Chromatography

Lab Sample ID: MB 280-360047/1-A
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monomethyl Hydrazine	ND		10	0.25	ug/L		01/25/17 20:22	02/03/17 21:06	1

Lab Sample ID: LCS 280-360047/2-A
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	49.6	47.7		ug/L		96	82 - 122

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: DV-WC-0077 - Hydrazine, Ion Chromatography (Continued)

Lab Sample ID: 280-93321-O-16-B MS

Matrix: Water
Analysis Batch: 361024

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 360047
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	ND		49.6	42.3		ug/L		85	81 - 121

Lab Sample ID: 280-93321-O-16-C MSD

Matrix: Water
Analysis Batch: 361024

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 360047
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Monomethyl Hydrazine	ND		49.6	43.1		ug/L		87	81 - 121	2	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384516/1

Matrix: Water
Analysis Batch: 384516

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:19	1

Lab Sample ID: LCS 440-384516/2

Matrix: Water
Analysis Batch: 384516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	1030		mg/L		103	90 - 110

Lab Sample ID: 440-174324-A-1 DU

Matrix: Water
Analysis Batch: 384516

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	42		43.0		mg/L		2	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-384905/1

Matrix: Water
Analysis Batch: 384905

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/27/17 13:54	1

Lab Sample ID: LCS 440-384905/2

Matrix: Water
Analysis Batch: 384905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Suspended Solids	1000	1010		mg/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-174916-B-1 DU
Matrix: Water
Analysis Batch: 384905

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	25		24.0		mg/L		2	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-384650/1-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1

Lab Sample ID: LCS 440-384650/2-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	101		ug/L		101	90 - 110

Lab Sample ID: LCSD 440-384650/3-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	101		ug/L		101	90 - 110	1	10

Lab Sample ID: 440-174317-P-1-D MS
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	101		ug/L		101	70 - 115

Lab Sample ID: 440-174317-P-1-E MSD
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-384765/10
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			01/26/17 21:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: LCS 440-384765/11
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	4.960		mg/L		99	90 - 110

Lab Sample ID: MRL 440-384765/9
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.1740	J,DX	mg/L		87	10 - 200

Lab Sample ID: 440-174317-J-1 MS
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	4.960		mg/L		99	90 - 110

Lab Sample ID: 440-174317-J-1 MSD
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	4.980		mg/L		100	90 - 110	0	15

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-384224/8
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.65	mg/L			01/24/17 11:12	1

Lab Sample ID: LCS 440-384224/7
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.78		mg/L		98	90 - 110

Lab Sample ID: 440-174261-N-1 MS
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	18		5.00	22.6		mg/L		99	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: SM 5310B - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 440-174261-N-1 MSD
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	18		5.00	22.6		mg/L		99	80 - 120	0	20

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-383953/3
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			01/23/17 21:55	1

Lab Sample ID: LCS 440-383953/4
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.270		mg/L		108	90 - 110

Lab Sample ID: 440-174317-G-1 MS
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.11		0.250	0.404		mg/L		119	50 - 125

Lab Sample ID: 440-174317-G-1 MSD
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.11		0.250	0.386		mg/L		112	50 - 125	5	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-383902/1
Matrix: Water
Analysis Batch: 383902

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			01/23/17 16:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: SM5210B - BOD, 5 Day (Continued)

Lab Sample ID: LCS 440-383902/4
 Matrix: Water
 Analysis Batch: 383902

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	190		mg/L		95	85 - 115

Lab Sample ID: LCSD 440-383902/5
 Matrix: Water
 Analysis Batch: 383902

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	193		mg/L		97	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

GC/MS VOA

Analysis Batch: 384472

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	8260B SIM	
MB 440-384472/2	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-384472/3	Lab Control Sample	Total/NA	Water	8260B SIM	
440-173985-B-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
440-173985-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

GC/MS Semi VOA

Prep Batch: 384349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	625	
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 384955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	384349
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	384349

Analysis Batch: 385461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	384349
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	384349

GC Semi VOA

Prep Batch: 384080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	608	
MB 440-384080/1-A	Method Blank	Total/NA	Water	608	
LCS 440-384080/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-384080/5-B	Lab Control Sample	Total/NA	Water	608	
440-174317-G-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-174317-G-1-D MS	Matrix Spike	Total/NA	Water	608	
440-174317-H-1-A MS	Matrix Spike	Total/NA	Water	608	
440-174317-R-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608	

Analysis Batch: 384312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	608 PCB LL	384080
MB 440-384080/1-A	Method Blank	Total/NA	Water	608 PCB LL	384080
LCS 440-384080/5-B	Lab Control Sample	Total/NA	Water	608 PCB LL	384080

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

GC Semi VOA (Continued)

Analysis Batch: 384312 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-G-1-D MS	Matrix Spike	Total/NA	Water	608 PCB LL	384080
440-174317-R-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608 PCB LL	384080

Analysis Batch: 384572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	608 Pesticides	384080
MB 440-384080/1-A	Method Blank	Total/NA	Water	608 Pesticides	384080
LCS 440-384080/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	384080
440-174317-G-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	384080
440-174317-H-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	384080

HPLC/IC

Analysis Batch: 383771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	300.0	
MB 440-383771/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383771/2	Lab Control Sample	Total/NA	Water	300.0	
440-174322-D-3 MS	Matrix Spike	Total/NA	Water	300.0	
440-174322-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 383772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	300.0	
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	300.0	
MB 440-383772/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383772/2	Lab Control Sample	Total/NA	Water	300.0	
440-174322-D-3 MS	Matrix Spike	Total/NA	Water	300.0	
440-174322-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 383776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	218.6	
MB 440-383776/3	Method Blank	Total/NA	Water	218.6	
LCS 440-383776/2	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-383776/4	Lab Control Sample	Total/NA	Water	218.6	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	218.6	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	218.6	

Analysis Batch: 385114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	314.0	
MB 440-385114/3	Method Blank	Total/NA	Water	314.0	
LCS 440-385114/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-385114/5	Lab Control Sample	Total/NA	Water	314.0	
440-174312-1 MS	Outfall002_20170123_Comp	Total/NA	Water	314.0	
440-174312-1 MSD	Outfall002_20170123_Comp	Total/NA	Water	314.0	

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

HPLC/IC (Continued)

Analysis Batch: 385517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	1613B	
440-174312-1 - RA	Outfall002_20170123_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCSD 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1 - RA	Outfall002_20170123_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384111

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	245.1	
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174317-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-174317-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	245.1	384111
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	384111
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	384111
440-174317-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	384111
440-174317-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	384111

Filtration Batch: 384878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	FILTRATION	
MB 440-384878/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-384878/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Metals (Continued)

Filtration Batch: 384878 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-384878/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174317-A-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174317-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 384941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	245.1	384878
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384878
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384878
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	384878
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	384878

Analysis Batch: 385549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	245.1	384941
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384941
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384941
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	384941
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	384941

Prep Batch: 385576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	200.2	384878
MB 440-384878/1-D	Method Blank	Dissolved	Water	200.2	384878
LCS 440-384878/2-D	Lab Control Sample	Dissolved	Water	200.2	384878
440-174317-A-2-H MS	Matrix Spike	Dissolved	Water	200.2	384878
440-174317-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	384878

Prep Batch: 385577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	200.2	384878
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	200.2	384878
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	384878

Prep Batch: 385849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total Recoverable	Water	200.2	
MB 440-385849/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385849/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174312-1 MS	Outfall002_20170123_Comp	Total Recoverable	Water	200.2	
440-174312-1 MSD	Outfall002_20170123_Comp	Total Recoverable	Water	200.2	

Prep Batch: 385851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Metals (Continued)

Prep Batch: 385851 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-385851/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385851/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174312-1 MS	Outfall002_20170123_Comp	Total Recoverable	Water	200.2	
440-174312-1 MSD	Outfall002_20170123_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 386053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385576
MB 440-384878/1-D	Method Blank	Dissolved	Water	200.7 Rev 4.4	385576
LCS 440-384878/2-D	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	385576
440-174317-A-2-H MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	385576
440-174317-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	385576

Analysis Batch: 386100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total Recoverable	Water	SM 2340B	
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 386210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	200.8	385577
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.8	385577
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.8	385577
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	200.8	385577
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	385577

Analysis Batch: 386341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	385849
MB 440-385849/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385849
LCS 440-385849/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385849
440-174312-1 MS	Outfall002_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	385849
440-174312-1 MSD	Outfall002_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	385849

Analysis Batch: 386384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total Recoverable	Water	200.8	385851
MB 440-385851/1-A	Method Blank	Total Recoverable	Water	200.8	385851
LCS 440-385851/2-A	Lab Control Sample	Total Recoverable	Water	200.8	385851
440-174312-1 MS	Outfall002_20170123_Comp	Total Recoverable	Water	200.8	385851
440-174312-1 MSD	Outfall002_20170123_Comp	Total Recoverable	Water	200.8	385851

Analysis Batch: 386564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-2	Outfall002_20170123_Comp_F	Dissolved	Water	200.8	385577
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.8	385577
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.8	385577
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	200.8	385577
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	385577

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

General Chemistry

Prep Batch: 360047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	Filtration	
MB 280-360047/1-A	Method Blank	Total/NA	Water	Filtration	
LCS 280-360047/2-A	Lab Control Sample	Total/NA	Water	Filtration	
280-93321-O-16-B MS	Matrix Spike	Total/NA	Water	Filtration	
280-93321-O-16-C MSD	Matrix Spike Duplicate	Total/NA	Water	Filtration	

Analysis Batch: 361024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	DV-WC-0077	360047
MB 280-360047/1-A	Method Blank	Total/NA	Water	DV-WC-0077	360047
LCS 280-360047/2-A	Lab Control Sample	Total/NA	Water	DV-WC-0077	360047
280-93321-O-16-B MS	Matrix Spike	Total/NA	Water	DV-WC-0077	360047
280-93321-O-16-C MSD	Matrix Spike Duplicate	Total/NA	Water	DV-WC-0077	360047

Analysis Batch: 383902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM5210B	
USB 440-383902/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-383902/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-383902/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 383953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM 5540C	
MB 440-383953/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-383953/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-174317-G-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
440-174317-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 384088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	180.1	
MB 440-384088/5	Method Blank	Total/NA	Water	180.1	
440-174334-A-8 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 384224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM 5310B	
MB 440-384224/8	Method Blank	Total/NA	Water	SM 5310B	
LCS 440-384224/7	Lab Control Sample	Total/NA	Water	SM 5310B	
440-174261-N-1 MS	Matrix Spike	Total/NA	Water	SM 5310B	
440-174261-N-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310B	

Analysis Batch: 384516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM 2540C	
MB 440-384516/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384516/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174324-A-1 DU	Duplicate	Total/NA	Water	SM 2540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

General Chemistry (Continued)

Prep Batch: 384650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	Distill/CN	
MB 440-384650/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCS D 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174317-P-1-D MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174317-P-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 384744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM 4500 CN E	384650
MB 440-384650/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	384650
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	384650
LCS D 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	384650
440-174317-P-1-D MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	384650
440-174317-P-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	384650

Analysis Batch: 384765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-384765/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-384765/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-384765/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-174317-J-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-174317-J-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Analysis Batch: 384905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	SM 2540D	
MB 440-384905/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-384905/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174916-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BA	Relative percent difference out of control

GC Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
IB	CCV recovery above limit; analyte not detected

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BB	Sample > 4X spike concentration
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-17
California	State Program	9	2513	08-31-16 *
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-17
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16 *
Kansas	NELAP	7	E-10166	04-30-17
Louisiana	NELAP	6	02096	06-30-17
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-17 *
Nevada	State Program	9	CO0026	07-31-17
New Hampshire	NELAP	1	205310	04-28-17
New Jersey	NELAP	2	CO004	06-30-17
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-17 *
Oklahoma	State Program	6	8614	08-31-17
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-17
South Carolina	State Program	4	72002001	01-09-17 *
Texas	NELAP	6	T104704183-16-12	09-30-17
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-17
Virginia	NELAP	3	460232	06-14-17
Washington	State Program	10	C583	08-02-17
West Virginia DEP	State Program	3	354	11-30-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Laboratory: TestAmerica Denver (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999615430	08-31-17
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall002_20170122_Comp (440-174312-1)
DATE RECEIVED: 24 Jan - 17
ABC LAB NO.: TAM0117.197


CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 3.35 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 03 Feb-17 08:47 (p 1 of 1)

Test Code: TAM0117.197 | 18-0777-1639

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-0768-7266	Test Type: Cell Growth	Analyst:
Start Date: 24 Jan-17 16:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 28 Jan-17 14:15	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 03-7755-7616	Code: TAM0117.197	Client: Test America Irvine
Sample Date: 22 Jan-17 22:42	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report	
Sample Age: 42h (1.8 °C)	Station: Outfall002_20170122_Comp (440-174312-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
16-2328-3437	Cell Density	TST-Welch's t Test	4.9E-07	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
16-2328-3437	Cell Density	Control CV	0.02655	<<	0.2	Yes	Passes Criteria
16-2328-3437	Cell Density	Control Resp	1.44E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.438E+6	1.407E+6	1.470E+6	1.389E+6	1.516E+6	1.351E+4	3.820E+4	2.66%	0.00%
100		8	1.390E+6	1.332E+6	1.449E+6	1.295E+6	1.494E+6	2.468E+4	6.981E+4	5.02%	3.35%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.456E+6	1.412E+6	1.389E+6	1.417E+6	1.516E+6	1.449E+6	1.426E+6	1.443E+6
100		1.494E+6	1.348E+6	1.394E+6	1.345E+6	1.348E+6	1.295E+6	1.421E+6	1.478E+6

CETIS Analytical Report

Report Date: 03 Feb-17 08:47 (p 1 of 2)
 Test Code: TAM0117.197 | 18-0777-1639

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 16-2328-3437	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 03 Feb-17 8:47	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 03-0768-7266	Test Type: Cell Growth	Analyst:
Start Date: 24 Jan-17 16:15	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 28 Jan-17 14:15	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 03-7755-7616	Code: TAM0117.197	Client: Test America Irvine
Sample Date: 22 Jan-17 22:42	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report	
Sample Age: 42h (1.8 °C)	Station: Outfall002_20170122_Comp (440-174312-	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	11.68	0.7027	9	CDF	4.9E-07	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02655	<<	0.2	Yes	Passes Criteria
Control Resp	1.44E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	9.264E+09	9.264E+09	1	2.926	0.1092	Non-Significant Effect
Error	4.433E+10	3.166E+09	14			
Total	5.359E+10		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	3.633	8.862	0.0774	Equal Variances
Variances	Mod Levene Equality of Variance Test	2.921	8.862	0.1095	Equal Variances
Variances	Variance Ratio F Test	3.34	8.885	0.1341	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4442	3.878	0.2894	Normal Distribution
Distribution	D'Agostino Skewness Test	0.8959	2.576	0.3703	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1238	0.2471	0.8321	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9489	0.8408	0.4731	Normal Distribution

Cell Density Summary

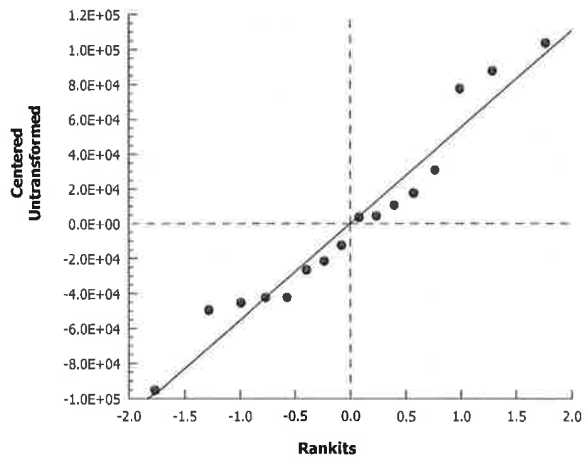
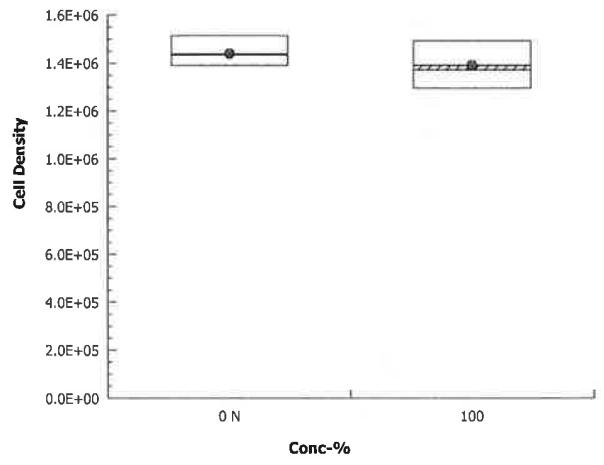
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.438E+6	1.407E+6	1.470E+6	1.434E+6	1.389E+6	1.516E+6	1.351E+4	2.66%	0.00%
100		8	1.390E+6	1.332E+6	1.449E+6	1.371E+6	1.295E+6	1.494E+6	2.468E+4	5.02%	3.35%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.456E+6	1.412E+6	1.389E+6	1.417E+6	1.516E+6	1.449E+6	1.426E+6	1.443E+6
100		1.494E+6	1.348E+6	1.394E+6	1.345E+6	1.348E+6	1.295E+6	1.421E+6	1.478E+6

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 16-2328-3437	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 03 Feb-17 8:47	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes	

Graphics



CETIS Measurement Report

Report Date: 03 Feb-17 08:47 (p 1 of 2)
 Test Code: TAM0117.197 | 18-0777-1639

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 03-0768-7266 **Test Type:** Cell Growth **Analyst:**
Start Date: 24 Jan-17 16:15 **Protocol:** EPA/821/R-02-013 (2002) **Diluent:** Laboratory Water
Ending Date: 28 Jan-17 14:15 **Species:** Selenastrum capricornutum **Brine:** Not Applicable
Duration: 94h **Source:** Aquatic Biosystems, CO **Age:**

Sample ID: 03-7755-7616 **Code:** TAM0117.197 **Client:** Test America Irvine
Sample Date: 22 Jan-17 22:42 **Material:** Sample Water **Project:** Boeing NPDES SSFL Outfalls
Receipt Date: 24 Jan-17 12:00 **Source:** Bioassay Report
Sample Age: 42h (1.8 °C) **Station:** Outfall002_20170122_Comp (440-174312-

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	63			63	63	0	0	0.0%	0
Overall		2	66	27.88	104.1	63	69	3	4.243	6.43%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	443.8	437.4	450.2	439	452	2.311	5.167	1.16%	0
100		5	404.8	403.2	406.4	404	407	0.5831	1.304	0.32%	0
Overall		10	424.3	409.4	439.2	404	452	6.596	20.86	4.92%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	95			95	95	0	0	0.0%	0
Overall		2	96	83.29	108.7	95	97	1	1.414	1.47%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.38	7.176	7.584	7.1	7.5	0.07349	0.1643	2.23%	0
Overall		10	7.45	7.337	7.563	7.1	7.7	0.05	0.1581	2.12%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.16	24.02	24.3	24	24.5	0.06182	0.1955	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 03 Feb-17 08:47 (p 2 of 2)
Test Code: TAM0117.197 | 18-0777-1639

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		63

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	452	439	440	445	443
100		407	404	405	404	404

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		95

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.6	7.7
100		7.4	7.1	7.4	7.5	7.5

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.5	24.2	24.1	24	24
100		24.5	24.2	24.1	24	24



TestAmerica Irvine

17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: Shipping/Receiving
Company: Aquatic Bioassay
Address: 29 North Olive Street,
City: Ventura
State, Zip: CA, 93001
Phone:
Email:
Project Name: Boeing NPDES SSFL outfalls
Site: SSOV#:
Sampler: Phone: Lab P/N: Patel, Urvashi
E-Mail: urvashi.patel@testamericainc.com
Accreditations Required (See note):
Carrier Tracking No(s): 440-106741.1
State of Origin: California
Page: Page 1 of 1
Job #: 440-174312-1

Due Date Requested: 2/3/2017
TAT Requested (days):
Analysis Requested:
COC No: 440-106741.1
Page: Page 1 of 1
Job #: 440-174312-1
Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsH2O2
P - Na2PO4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecylhydrate
U - Acetone
V - MCAA
W - pH 4.5
Z - other (specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=overseal)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Substrate	Total Number of containers	Special Instructions/Note:
Outfall002_20170122_Comp (440-174312-1)	1/22/17	22:42 Pacific		Water		X	SUB (Chronic-Selenestrum)/ Chronic-Selenestrum	6	Temp. dec. C = 18.2 Chlorine (mg/L) = 20.1 NH3 (mg/L) = 0.0

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other institutions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
<i>[Signature]</i>	1-24-17 0800	EA	<i>[Signature]</i>	1-24-17 0800	EA
<i>[Signature]</i>	1-24-17 1220	EA	<i>[Signature]</i>	1-24-17 1220	EA

Custody Seal Intact: Yes No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

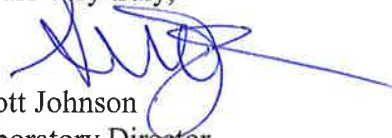
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:			
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab			
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

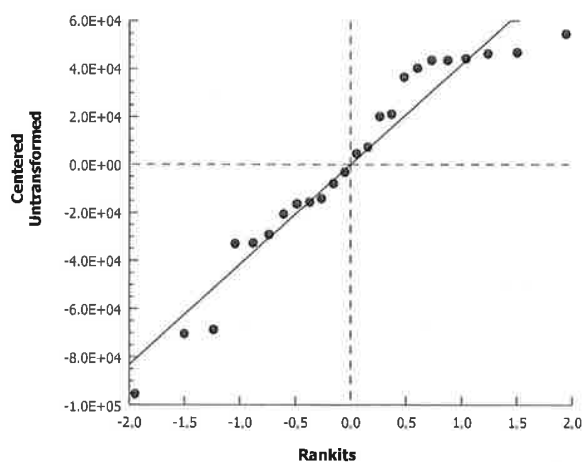
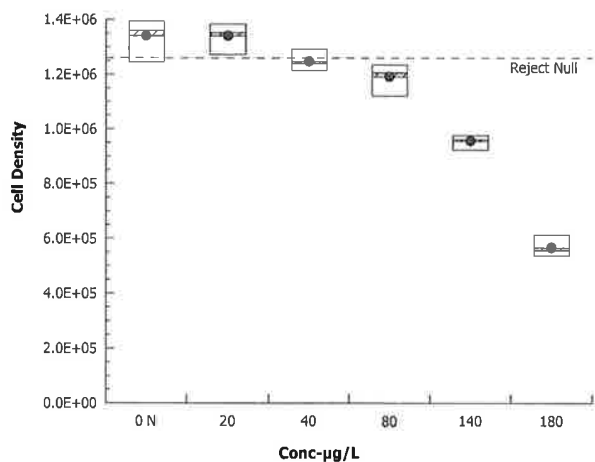
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 14-2916-7122	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Official Results: Yes
Analyzed: 19 Jan-17 16:21	Analysis: Linear Interpolation (ICPIN)		
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:	
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab	
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	34.35	13.62	61.11
IC10	69.42	18.65	99.03
IC15	93.35	62.81	109.5
IC20	110.4	88.48	124.6
IC25	127.5	108.9	141.2
IC40	155.7	149.9	160.7
IC50	169.5	164.4	175.1

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.0%
20		4	1.341E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.82%	6.92%
80		4	1.192E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



1 of 2
4 of 3

CHAIN OF CUSTODY FORM

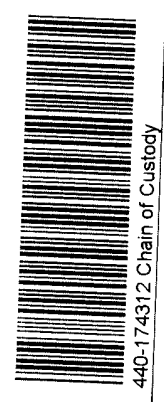
Test America

Client Name/Address: Hailey & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDDES Permit 2017 Annual Outfall [001, 002, 011, 018] Outfall 002 Comp		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED R/A R R R A A A A A		Comments	
Test America Contact: Urvasi Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Sample I.D. Outfall002_20170122_Comp_F		Sample Matrix WM		Container Type 1 L Poly		Preservative None		Bottle # MS/MSD 190 No	
Sampler: BRYAN BENSON		Sampling Date/Time 1/22/2017 2:42		Container Type borosilicate vials		Preservative None		Bottle # MS/MSD 320 No		Total Dissolved Metals: Mercury (245.1) X	
Sample Description Outfall 002		Sampling Date/Time 1/22/2017 2:42		Container Type 500 mL Poly		Preservative NaOH		Bottle # MS/MSD 220V No		Chronic Toxicity - Selenastrium X	
				Container Type 2.5 Gal Cube		Preservative None		Bottle # MS/MSD 225 No		Monomethyl Hydrazine X	
				Container Type 1 L Glass Amber		Preservative None		Bottle # MS/MSD 230 No		Total Organic Carbon X	
				Container Type 1 Gal Cube		Preservative None		Bottle # MS/MSD 235 No		1,4-Dioxane X	
				Container Type 40 mL VOA		Preservative HCl		Bottle # MS/MSD 240 No		Gross Alpha (900.0), Gross Beta (900.0), Total Tritium (4.3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, Cs-137 (901.0 or 901.1) X	
				Container Type 1 L Glass Amber		Preservative HCl		Bottle # MS/MSD 245 No		Cyanide X	
				Container Type 1 L Glass Amber		Preservative None		Bottle # MS/MSD 255 No		Total Dissolved Metals: Cu, Pb, Hg, B, Ba, Te, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V, Hardness as CaCO3 X	
				Container Type 500 mL Poly		Preservative None		Bottle # MS/MSD 260 No		Unfiltered and unpreserved analysis, Separate RAD onto another workorder. Only test if first or second rain events of the year	
										Store remaining samples in safety	

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R-Routine, A-Annual, Q-Quarterly

Relinquished By: [Signature]	Date/Time: 1/23/17 1400	Company: JMA	Received By: [Signature]	Date/Time: 1-23-17 1400	Company:
Relinquished By: [Signature]	Date/Time: 1-23-17 1550	Company:	Received By: [Signature]	Date/Time: 1/23/17 1550	Company:



440-174312 Chain of Custody

1-31-16
1-4-17
1-7-20



1072
4069

CHAIN OF CUSTODY FORM

Test America

Client Name/Address:		Project:		ANALYSIS REQUIRED												Comments
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Boeing-SSFL NPDES Permit 2017 Annual Outfall 001, 002, 011, 018 Outfall 002 Comp		Total Recoverable Metals: Mercury (245, 1)	SVOCs PP (625)	Priority Pollutants-Pesticides+PCBs	Ammonia-N (350, 2)	TSS	Turbidity, TDS	Chloride, F ⁻ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N	Surfactants (MBAS)	BOD ₅ (20 degrees C)	TCDD (and all congeners)	Hardness as CaCO ₃ Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Cu, Pb, Fe, V		
Test America Contact: Urvaashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Total Recoverable Metals: Cu, Pb, Hg, Mn, Fe												
Sampler: RYAN DENSON		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)														
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	48 hours Holding Time NO3 & NO2	48 hour holding time for turbidity	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.					
Outfall 002	Outfall002_20170122_Comp	1/22/2017 12:42	WM	500 mL Poly	1	HNO ₃	80	No								
			WM	1 L Glass Amber	2	None	110	No								
			WM	1 L Poly	1	None	115	No								
			WM	500 mL Poly	2	None	120	No								
			WM	500 mL Poly	2	None	125	No								
			WM	500 mL Poly	1	None	150	No								
			WM	500 mL Poly	1	H ₂ SO ₄	160	No								
			WM	1 L Glass Amber	2	None	250	No								
			WM	1 L Glass Amber	2	None	175	No								
			WM	1 L Poly	1	None	185	No								
			WM	bore-silicates vials	1	HNO ₃	315	No								

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By:	Date/Time: 1/23/17 1400	Company: SA	Turn-around time: (Check) 24 Hour: <input checked="" type="checkbox"/> 72 Hour: <input type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>
Relinquished By:	Date/Time: 1-23-17 1550	Company:	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/>
Relinquished By:	Date/Time: 1/23/17 1550	Company:	Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>

1-3/16 1-4/17 1-7/20



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174312-1

Login Number: 174312

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174312-1

Login Number: 174312

List Number: 3

Creator: Woodworth, Sean P

List Source: TestAmerica Denver

List Creation: 01/25/17 02:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174312-1

Login Number: 174312

List Number: 4

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/26/17 09:53 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174312-1	Outfall002_20170123_Comp	73	64	79	68	75	84	76	72
440-174312-1 - RA	Outfall002_20170123_Comp		62						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174312-1	Outfall002_20170123_Comp	67	68	68	91	78	85	107	72
440-174312-1 - RA	Outfall002_20170123_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174312-1	Outfall002_20170123_Comp		67		68		68	91	
440-174312-1 - RA	Outfall002_20170123_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174312-1	Outfall002_20170123_Comp		78		85		107
440-174312-1 - RA	Outfall002_20170123_Comp						
MB 320-147877/1-A	Method Blank		69		78		96

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174312-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174312-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170123_Comp	440-174312-1	N/A	WM	1/23/17 1:10 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174312-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha and Radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for gross alpha and Radium-226 were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.



III.5.2. **FIELD DUPLICATES:**

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401743122

Analysis Method E900

Sample Name Outfall002_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 1:10:00 PM Validation Level: 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.59	1.30	1.98	1.98	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	4.35	0.983	0.978	0.978	pCi/L			

Analysis Method E901.1

Sample Name Outfall002_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 1:10:00 PM Validation Level: 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-1.76	11.6	13.9	13.9	pCi/L	U	U	
Potassium-40	13966-00-2	-84.4	190	248	248	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 1:10:00 PM Validation Level: 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.246	0.250	0.391	0.391	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall002_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 1:10:00 PM Validation Level: 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.432	0.342	0.536	0.536	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.435	0.262	0.546	0.546	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-1.80	166	302	302	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall002_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 1:10:00 PM **Validation Level:** 8

Lab Sample Name: 440-174312-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.358	0.553	0.860	0.860	pCi/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174312-2

Client Project/Site: Annual Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/23/2017 11:03:16 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/23/2017 11:03:16 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174312-1	Outfall002_20170123_Comp	Water	01/23/17 13:10	01/23/17 15:50

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Job ID: 440-174312-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174312-2

Comments

No additional comments.

Receipt

The samples were received on 1/23/2017 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.6° C, 1.7° C and 2.0° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-292256:

The gross alpha matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the lower control limit of 60% (56% and 59%). Sample matrix interference is suspected because the associated gross alpha laboratory control sample (LCS) recovery is within acceptance limits. The data have been qualified and reported.

Outfall002_20170123_Comp (440-174312-1), (LCS 160-292256/2-A), (LCSB 160-292256/3-A), (MB 160-292256/1-A), (440-174317-Q-1-K), (440-174317-Q-1-L MS), (440-174317-Q-1-N MSB), (440-174317-Q-1-O MSB) and (440-174317-Q-1-M MSD)

Method(s) 905: Strontium-90 Prep Batch 160-290301:

The absolute value of the negative result for the following sample is outside the three sigma uncertainty: Outfall002_20170123_Comp (440-174312-1). A recount was not possible due to the passing of a full decay cycle of yttrium-90. The data has been qualified and reported.

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences. Outfall002_20170123_Comp (440-174312-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.59	U	1.29	1.30	3.00	1.98	pCi/L	02/14/17 10:22	02/20/17 21:38	1
Gross Beta	4.35		0.881	0.983	4.00	0.978	pCi/L	02/14/17 10:22	02/20/17 21:38	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-1.76	U	11.6	11.6	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:30	1
Potassium-40	-84.4	U	190	190		248	pCi/L	01/26/17 14:59	01/26/17 18:30	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.246	U	0.249	0.250	1.00	0.391	pCi/L	01/30/17 10:23	02/21/17 21:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	72.0		40 - 110					01/30/17 10:23	02/21/17 21:06	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.432	U	0.339	0.342	1.00	0.536	pCi/L	01/30/17 13:37	02/20/17 11:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	72.0		40 - 110					01/30/17 13:37	02/20/17 11:20	1
Y Carrier	83.7		40 - 110					01/30/17 13:37	02/20/17 11:20	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.435	U	0.259	0.262	3.00	0.546	pCi/L	01/31/17 11:55	02/13/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.2		40 - 110					01/31/17 11:55	02/13/17 17:08	1
Y Carrier	95.7		40 - 110					01/31/17 11:55	02/13/17 17:08	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-1.80	U	166	166	500	302	pCi/L	02/21/17 12:33	02/22/17 00:03	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Total Uranium	0.358	U	0.552	0.553	1.00	0.860	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.0		30 - 110					02/01/17 09:37	02/14/17 15:44	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Client Sample ID: Outfall002_20170123_Comp

Lab Sample ID: 440-174312-1

Date Collected: 01/23/17 13:10

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292256	02/14/17 10:22	MRB	TAL SL
Total/NA	Analysis	900.0		1			293387	02/20/17 21:38	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289211	01/26/17 18:30	CDR	TAL SL
Total/NA	Prep	PrecSep-21			1000.50 mL	1.0 g	290058	01/30/17 10:23	AS	TAL SL
Total/NA	Analysis	903.0		1			293679	02/21/17 21:06	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.50 mL	1.0 g	290115	01/30/17 13:37	AS	TAL SL
Total/NA	Analysis	904.0		1			293387	02/20/17 11:20	RTM	TAL SL
Total/NA	Prep	PrecSep-7			501.83 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:08	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/22/17 00:03	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.42 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292519	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292256/1-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292256

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.9375		0.646	0.654	3.00	0.930	pCi/L	02/14/17 10:22	02/20/17 06:20	1
Gross Beta	0.7595	U	0.541	0.546	4.00	0.814	pCi/L	02/14/17 10:22	02/20/17 06:20	1

Lab Sample ID: LCS 160-292256/2-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	41.84		6.18	3.00	1.76	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-292256/3-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.1	88.28		9.35	4.00	0.832	pCi/L	97	75 - 125

Lab Sample ID: 440-174317-Q-1-L MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	1.10	U	49.9	28.11	F1	4.52	3.00	1.67	pCi/L	56	60 - 140

Lab Sample ID: 440-174317-Q-1-M MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	1.10	U	49.9	29.64	F1	4.89	3.00	1.70	pCi/L	59	60 - 140	0.16	1

Lab Sample ID: 440-174317-Q-1-N MSBT
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	3.67		91.1	89.43		9.48	4.00	1.08	pCi/L	94	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174317-Q-1-O MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	3.67		91.1	87.05		9.23	4.00	1.10	pCi/L	92	60 - 140	0.13	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-AK-1-B DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L	0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L	0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290058/1-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05389	U	0.113	0.113	1.00	0.282	pCi/L	01/30/17 10:23	02/21/17 20:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					01/30/17 10:23	02/21/17 20:55	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290058/2-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	7.329		1.04	1.00	0.310	pCi/L	122	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	84.1		40 - 110							

Lab Sample ID: 440-174317-F-1-C MS
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.177	U	6.01	7.673		1.11	1.00	0.362	pCi/L	128	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	86.4		40 - 110								

Lab Sample ID: 440-174317-F-1-D MSD
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.177	U	6.01	7.775		1.24	1.00	0.541	pCi/L	129	75 - 138	0.04	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	61.1		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290115/1-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290115

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-228	0.1504	U	0.263	0.264	1.00	0.447	pCi/L	01/30/17 13:37	02/20/17 11:17	1	
Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac					
Ba Carrier	83.8		40 - 110	01/30/17 13:37	02/20/17 11:17	1					
Y Carrier	82.6		40 - 110	01/30/17 13:37	02/20/17 11:17	1					

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-290115/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.70		1.82	1.00	0.428	pCi/L	121	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	84.1		40 - 110						
Y Carrier	81.5		40 - 110						

Lab Sample ID: 440-174317-F-1-E MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.179	U	13.8	15.35		1.68	1.00	0.426	pCi/L	111	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	86.4		40 - 110								
Y Carrier	84.1		40 - 110								

Lab Sample ID: 440-174317-F-1-F MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.179	U	13.8	17.08		1.95	1.00	0.616	pCi/L	123	45 - 150	0.48	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	61.1		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac		
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1		
MB MB												
Carrier	%Yield	Qualifier	Limits							Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110							01/31/17 11:55	02/13/17 15:14	1
Y Carrier	98.7		40 - 110							01/31/17 11:55	02/13/17 15:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-O-1-B MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-O-1-C MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
	Result	Qual		Result	Qual						Min	Max
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65	146
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68	143
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	78.6		30 - 110									

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
	Result	Qual		Result	Qual						Min	Max	RER	Limit
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65	146	0.04	1
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68	143	0.29	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	84.1		30 - 110											

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
	Result	Qual		Result	Qual						Min	Max
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65	146
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68	143
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	78.6		30 - 110									

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
	Result	Qual		Result	Qual						Min	Max	RER	Limit
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65	146	0.22	1
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68	143	0.35	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	86.7		30 - 110											

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-AK-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	PrecSep-21	
MB 160-290058/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290058/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174317-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-174317-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 290115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	PrecSep_0	
MB 160-290115/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290115/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174317-F-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-174317-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	Evaporation	
MB 160-292256/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292256/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292256/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174317-Q-1-L MS	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-174317-Q-1-N MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-O MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174312-1	Outfall002_20170123_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

1 of 2
4 of 3

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Hailey & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NIPDES Permit 2017 Annual Outfall [001, 002, 011, 018] Outfall 002 Comp		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED R/A R R R A A A A A		Comments 	
Test America Contact: Urvasi Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Sample I.D. Outfall002_20170122_Comp_F		Sample Matrix WM		Container Type 1 L Poly		Preservative None		Bottle # MS/MSD 190 No	
Sampler: BRYAN BENSON		Sampling Date/Time 1/22/2017 2:42		Container Type borosilicate vials		Preservative None		Bottle # MS/MSD 320 No		Total Dissolved Metals: Mercury (245.1) X	
Sample Description Outfall 002		Sampling Date/Time 1/22/2017 2:42		Container Type 500 mL Poly		Preservative NaOH		Bottle # MS/MSD 220V No		Chronic Toxicity - Selenastrium X	
				Container Type 2.5 Gal Cube		Preservative None		Bottle # MS/MSD 225 No		Total Organic Carbon X	
				Container Type 1 L Glass Amber		Preservative None		Bottle # MS/MSD 230 No		1,4-Dioxane X	
				Container Type 1 Gal Cube		Preservative None		Bottle # MS/MSD 235 No		Gross Alpha (900.0), Gross Beta (900.0), Tritium (T-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, Cs-137 (901.0 or 901.1) X	
				Container Type 40 mL VOA		Preservative HCl		Bottle # MS/MSD 240 No		Cyanide X	
				Container Type 1 L Glass Amber		Preservative HCl		Bottle # MS/MSD 245 No		Total Dissolved Metals: Cu, Pb, Hg, B, Ba, T, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V, Hardness as CaCO3 X	
				Container Type 1 L Glass Amber		Preservative None		Bottle # MS/MSD 255 No		Monomethyl Hydrazine X	
				Container Type 500 mL Poly		Preservative None		Bottle # MS/MSD 260 No		Total Dissolved Metals: Mercury (245.1) X	
										Unfiltered and unpreserved analysis, Separate RAD onto another workorder. Only test if first or second rain events of the year Store remaining samples in unity	

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R-Routine, A-Annual, Q-Quarterly

Relinquished By: [Signature]	Date/Time: 1/23/17 1400	Company: JMA	Received By: [Signature]	Date/Time: 1-23-17 1400	Company:	Turn-around time: (Check) 24 Hour: <input checked="" type="checkbox"/> 72 Hour: <input type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> Normal: <input type="checkbox"/>
Relinquished By: [Signature]	Date/Time: 1-23-17 1550	Company:	Received By: [Signature]	Date/Time: 1/23/17 1550	Company:	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/>
Relinquished By:	Date/Time:	Company:	Received By:	Date/Time:	Company:	Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>



440-174312 Chain of Custody

1-31-16
1-4-17
1-7-20



1072
4069

CHAIN OF CUSTODY FORM

Test America

Client Name/Address:		Project:		ANALYSIS REQUIRED												Comments
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Boeing-SSFL NPDES Permit 2017 Annual Outfall 001, 002, 011, 018 Outfall 002 Comp		Total Recoverable Metals: Mercury (245.1)	SVOCs PP (625)	Priority Pollutants-Pesticides+PCBs	Ammonia-N (350.2)	TSS	Turbidity, TDS	Chloride, F ⁻ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N	Surfactants (MBAS)	BOD ₅ (20 degrees C)	TCDD (and all congeners)	Hardness as CaCO ₃ Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Pb, Hg, Cu, Fe		
Test America Contact: Urvaashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Total Recoverable Metals: Cu, Pb, Hg, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Pb, Hg, Cu, Fe												
Sampler: RYAN DENSON		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)														
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	48 hours Holding Time NO3 & NO2	48 hour holding time for turbidity	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.					
Outfall 002	Outfall002_20170122_Comp	1/22/2017 12:42	WM	500 mL Poly	1	HNO ₃	80	No								
			WM	1 L Glass Amber	2	None	110	No								
			WM	1 L Poly	1	None	115	No								
			WM	500 mL Poly	2	None	120	No								
			WM	500 mL Poly	2	None	125	No								
			WM	500 mL Poly	1	None	150	No								
			WM	500 mL Poly	1	H ₂ SO ₄	160	No								
			WM	1 L Glass Amber	2	None	250	No								
			WM	1 L Glass Amber	2	None	175	No								
			WM	1 L Poly	1	None	185	No								
			WM	bore-silicates vials	1	HNO ₃	315	No								

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 002 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 002 for the same event.

Legend: R=Routine, A=Annual, Q=Quarterly

Relinquished By:	Date/Time: 1/23/17 1400	Company: S/A	Turn-around time: (Check) 24 Hour: <input checked="" type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>
Relinquished By:	Date/Time: 1-23-17 1550	Company: 1550	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/>
Relinquished By:	Date/Time: 1/23/17 1550	Company: 1550	Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>

1-3/16 1-4/17 1-7/20



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174312-2

Login Number: 174312

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174312-2

Login Number: 174312

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/25/17 02:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174312-1	Outfall002_20170123_Comp	72.0
440-174317-F-1-C MS	Matrix Spike	86.4
440-174317-F-1-D MSD	Matrix Spike Duplicate	61.1
LCS 160-290058/2-A	Lab Control Sample	84.1
MB 160-290058/1-A	Method Blank	83.8

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174312-1	Outfall002_20170123_Comp	72.0	83.7
440-174317-F-1-E MS	Matrix Spike	86.4	84.1
440-174317-F-1-F MSD	Matrix Spike Duplicate	61.1	83.0
LCS 160-290115/2-A	Lab Control Sample	84.1	81.5
MB 160-290115/1-A	Method Blank	83.8	82.6

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174110-G-1-E MS	Matrix Spike	84.4	98.3
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9
440-174312-1	Outfall002_20170123_Comp	83.2	95.7
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-F-1-E MS	Matrix Spike	78.6
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1
440-174312-1	Outfall002_20170123_Comp	77.0

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 002 Comp

TestAmerica Job ID: 440-174312-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175530-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175530-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170203_Grab	440-175530-1	N/A	Water	2/3/2017 7:30:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175530-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs, with one exception noted below.
- According to the sample receipt form, custody seals were intact on the cooler.

The following issue was noted:

- The field sampler was not listed on the COC



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170203_Grab. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170203 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^x reviewed the SDG on March 24, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 120.1 and 1664, Standard Method for the Examination of Water and Wastewater 2540F, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

Settleable solids were analyzed over three days past the 48-hour holding time requirement. The result for settleable solids was qualified as estimated (UJ). The remaining analytical holding times as listed below were met:

- 28 days for n-hexane extractable material (HEM) and specific conductance

IV.2. CALIBRATION

Calibration criteria were met. The continuing calibration recovery for specific conductance was within 90-110%. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blanks had no detects for specific conductance or HEM.

IV.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits for specific conductance and HEM. The RPD for HEM was $\leq 11\%$.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

IV.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401755301

Analysis Method E120.1

Sample Name Outfall002_20170203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2017 7:30:00 AM Validation Level: 8

Lab Sample Name: 440-175530-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	720	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall002_20170203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2017 7:30:00 AM Validation Level: 8

Lab Sample Name: 440-175530-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.4	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall002_20170203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2017 7:30:00 AM Validation Level: 8

Lab Sample Name: 440-175530-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall002_20170203_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/3/2017 7:30:00 AM Validation Level: 8

Lab Sample Name: 440-175530-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	UBU	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175530-1

Client Project/Site: Routine Outfall 002 Grab

Revision: 2

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/4/2017 9:12:17 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/4/2017 9:12:17 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175530-1	Outfall002_20170203_Grab	Water	02/03/17 07:30	02/03/17 19:00
440-175530-3	TB-20170203	Water	02/03/17 07:30	02/03/17 19:00

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Job ID: 440-175530-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-175530-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Revised to correct level IV report and ms/msd.

Receipt

The samples were received on 2/3/2017 7:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.0° C.

Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) SM 2540F: The following sample was analyzed outside of analytical holding time due to employee oversight.:
Outfall002_20170203_Grab (440-175530-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-389208 and analytical batch 440-389328. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Client Sample ID: Outfall002_20170203_Grab

Lab Sample ID: 440-175530-1

Date Collected: 02/03/17 07:30

Matrix: Water

Date Received: 02/03/17 19:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 09:28	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 09:28	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 09:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120					02/10/17 09:28	1
Dibromofluoromethane (Surr)	108		76 - 132					02/10/17 09:28	1
Toluene-d8 (Surr)	103		80 - 128					02/10/17 09:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.4	1.5	mg/L		02/20/17 06:44	02/20/17 14:12	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	720		1.0	1.0	umhos/cm			02/08/17 12:30	1
Settleable Solids	ND	BU	0.10	0.10	mL/L/Hr			02/06/17 14:52	1

Client Sample ID: TB-20170203

Lab Sample ID: 440-175530-3

Date Collected: 02/03/17 07:30

Matrix: Water

Date Received: 02/03/17 19:00

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 10:55	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 10:55	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 10:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120					02/10/17 10:55	1
Dibromofluoromethane (Surr)	107		76 - 132					02/10/17 10:55	1
Toluene-d8 (Surr)	106		80 - 128					02/10/17 10:55	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Client Sample ID: Outfall002_20170203_Grab

Lab Sample ID: 440-175530-1

Date Collected: 02/03/17 07:30

Matrix: Water

Date Received: 02/03/17 19:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	387596	02/10/17 09:28	WC	TAL IRV
Total/NA	Analysis	120.1		1			387154	02/08/17 12:30	XL	TAL IRV
Total/NA	Prep	1664A			925 mL	1000 mL	389208	02/20/17 06:44	L1A	TAL IRV
Total/NA	Analysis	1664A		1			389328	02/20/17 14:12	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	386767	02/06/17 14:52	ST	TAL IRV

Client Sample ID: TB-20170203

Lab Sample ID: 440-175530-3

Date Collected: 02/03/17 07:30

Matrix: Water

Date Received: 02/03/17 19:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	387596	02/10/17 10:55	WC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387596/4
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 08:27	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 08:27	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 08:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120		02/10/17 08:27	1
Dibromofluoromethane (Surr)	105		76 - 132		02/10/17 08:27	1
Toluene-d8 (Surr)	103		80 - 128		02/10/17 08:27	1

Lab Sample ID: LCS 440-387596/5
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	25.2		ug/L		101	70 - 130
1,2-Dichloroethane	25.0	26.5		ug/L		106	57 - 138
Trichloroethene	25.0	27.0		ug/L		108	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	103		80 - 128

Lab Sample ID: 440-175530-1 MS
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Outfall002_20170203_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	25.9		ug/L		104	70 - 130
1,2-Dichloroethane	ND		25.0	28.4		ug/L		114	56 - 146
Trichloroethene	ND		25.0	28.7		ug/L		115	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Lab Sample ID: 440-175530-1 MSD
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Outfall002_20170203_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	28.5		ug/L		114	56 - 146	0	20
Trichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175530-1 MSD
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Outfall002_20170203_Grab
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-387154/3
Matrix: Water
Analysis Batch: 387154

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			02/08/17 08:16	1

Lab Sample ID: LCS 440-387154/4
Matrix: Water
Analysis Batch: 387154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	801		umhos/cm		104	90 - 110

Lab Sample ID: 440-175626-B-1 DU
Matrix: Water
Analysis Batch: 387154

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	41		39.8		umhos/cm		3	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-389208/1-A
Matrix: Water
Analysis Batch: 389328

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389208

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/20/17 06:44	02/20/17 14:12	1

Lab Sample ID: LCS 440-389208/2-A
Matrix: Water
Analysis Batch: 389328

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389208

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	37.2		mg/L		93	78 - 114

Lab Sample ID: LCSD 440-389208/3-A
Matrix: Water
Analysis Batch: 389328

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389208

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	38.4		mg/L		96	78 - 114	3	11

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

GC/MS VOA

Analysis Batch: 387596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175530-1	Outfall002_20170203_Grab	Total/NA	Water	624	
440-175530-3	TB-20170203	Total/NA	Water	624	
MB 440-387596/4	Method Blank	Total/NA	Water	624	
LCS 440-387596/5	Lab Control Sample	Total/NA	Water	624	
440-175530-1 MS	Outfall002_20170203_Grab	Total/NA	Water	624	
440-175530-1 MSD	Outfall002_20170203_Grab	Total/NA	Water	624	

General Chemistry

Analysis Batch: 386767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175530-1	Outfall002_20170203_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 387154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175530-1	Outfall002_20170203_Grab	Total/NA	Water	120.1	
MB 440-387154/3	Method Blank	Total/NA	Water	120.1	
LCS 440-387154/4	Lab Control Sample	Total/NA	Water	120.1	
440-175626-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 389208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175530-1	Outfall002_20170203_Grab	Total/NA	Water	1664A	
MB 440-389208/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-389208/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-389208/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 389328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175530-1	Outfall002_20170203_Grab	Total/NA	Water	1664A	389208
MB 440-389208/1-A	Method Blank	Total/NA	Water	1664A	389208
LCS 440-389208/2-A	Lab Control Sample	Total/NA	Water	1664A	389208
LCSD 440-389208/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	389208

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-175530-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

Test America

CHAIN OF CUSTODY FORM

Client Name/Address: **Boeing-SSFL NPDES** Project: **Boeing-SSFL NPDES**

Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108
 Routine Outfall 001, 002, 011, 018)
 Permit 2017

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 Project Manager: **Katherine Miller**
 520 289 8606, 520 904 8944 (cell)
 Field Manager: **Mark Dominick**
 818 350 7312, 818 599 0702 (cell)

Test America's services under this COC shall be performed in accordance with the TFCs within Bunker Service Agreement 2015-16. Test America by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Representative Laboratories Inc.

Sampler: **Outfall 002**

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED				
									Oil & Grease (E1664A-HEM)	VOCs - only 1,1-DCE, 1,2-DCA, TCE (E624)	Settleable Solids (E160.5 (SM2540F))	Conductivity (SM2510B / E120.1)	
Outfall002_20170203_Grab		2/3/2017 11:57	WM	1 L Glass Amber	2	HCl	15	No	X				
			WM	40 mL VOA	9	HCl	30	Yes	X				
			WM	1L Poly	1	None	70	No	X				
			WM	500 mL Poly	1	None	75	No		X			
			WM	1 L Glass Amber	2	HCl	15	No		H			
			WM	40 mL VOA	3	HCl	30	No		H			
			WM	500 mL Poly	1	None	75	No		H			
			WQ	40 mL VOA	3	HCl	30	No		X			
Tip Brakes	TB-20170203	2/3/2017 11:57											



Relinquished By: <i>[Signature]</i>	Date/Time: 2/3/17 11:57	Company: SHN	Received By: <i>[Signature]</i>	Date/Time: 2/3/17 11:57	Turn-around time: (Check) 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>
Relinquished By: <i>[Signature]</i>	Date/Time: 2/3/17 19:00	Company: 1900	Received By: <i>[Signature]</i>	Date/Time: 2/3/17 19:00	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/> Store samples for 6 months. Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>

UTZ
RSC

3.7/4.0
1 RSC6

11/19/17

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175530-1

Login Number: 175530

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	The Field Sampler was not listed on the Chain of Custody.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175633-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-175633-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170204_Comp	440-175633-1	N/A	Water	2/4/17 8:30 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2340, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall002_20170204_Comp_F	440-175633-3	N/A	Water	2/4/17 8:30 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175633-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDD and 2,3,7,8-TCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD and PeCDF in the method blank were the same peaks comprising the totals in sample Outfall002_20170204_Comp. The results for totals HpCDD and PeCDF were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total results in the sample included more peaks than the method blank totals. The sample



results for totals HpCDF, HxCDD, HxCDF, and TCDF were therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Totals HpCDF, HxCDD, HxCDF, and TCDF containing EMPC peaks were qualified as estimated (J).



IV. EPA METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^X reviewed the SDG on March 30, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review* (2014).

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall002_20170204_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. Fewer than half of the interferents were present in the site samples at concentrations greater than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Sample Outfall002_20170204_Comp and Sample Outfall002_20170204_Comp_F for both methods. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

E. Wessling of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.



V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the site sample of this SDG. Recoveries and the RPD were within the laboratory control limits.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha-BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.



VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115% and the RPD was $\leq 15\%$.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170204_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the RL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met for applicable target compounds. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1 METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2 LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. The reviewer noted target compound 2,4-dinitrotoluene was not spiked in the LCS.

VII.3.3 SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG, Outfall002_20170204_Comp. Recoveries and RPDs were within the laboratory control limits. The reviewer noted target compound 2,4-dinitrotoluene was not spiked in the MS/MSD.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1 FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2 FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

**VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 180.1, 300.0 and 821-R-02-013*, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VIII.1. HOLDING TIMES

Chronic toxicity was analyzed 16 hours past the 36-hour holding time requirement. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recoveries for ammonia and turbidity were within the laboratory control limits of 10-200% and 50-150%, respectively. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

VIII.3. QUALITY CONTROL SAMPLES**VIII.3.1. METHOD BLANKS**

The method blanks and calibration blanks had no detects.



VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs for BOD and total cyanide were $\leq 20\%$ and $\leq 10\%$, respectively.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall002_20170204_Comp for TDS. The RPD was $\leq 5\%$.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20170204_Comp for ammonia, anions, MBAS, and total cyanide. Recoveries and RPDs were within the laboratory control limits.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

Chloride and sulfate in sample Outfall002_20170204_Comp were reported from a 10× dilution. Nitrate and nitrite nondetects reported from a 10× dilution were rejected since there are reportable values within the linear calibration range.

VIII.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401756331

Analysis Method E1613B

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000065	0.000095	0.00000013	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000020	0.000095	0.00000023	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000014	0.000048	0.00000027	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000033	0.000048	0.00000028	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000055	0.000048	0.00000033	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000046	0.000048	0.00000012	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000031	0.000048	0.00000015	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000050	0.000048	0.00000012	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000064	0.000048	0.00000015	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000036	0.000048	0.000000097	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000039	0.000048	0.00000012	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000023	0.000048	0.00000013	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000048	0.00000024	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000028	0.000048	0.000000099	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000024	0.000048	0.00000013	ug/L	J,DXMBq	U	B
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000095	0.0000021	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000060	0.000095	0.00000014	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000095	0.00000020	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000058	0.000048	0.00000030	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000055	0.000048	0.00000028	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000023	0.000048	0.00000011	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000020	0.000048	0.00000014	ug/L	J,DXMBq	J	B, DNQ, *III

Monday, April 03, 2017

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000048	0.000048	0.00000013	ug/L	J,DXMBq	U	B
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000048	0.00000024	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000010	0.0000095	0.00000014	ug/L	J,DXMBq	J	B, DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000095	0.00000020	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	0.83	0.10	0.040	NTU			

Analysis Method E200.8

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	1.3	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	0.50	2.0	0.50	ug/L	J,DX	J	DNQ
Zinc	T	7440-66-6	2.9	20	2.5	ug/L	J,DX	J	DNQ

Sample Name Outfall002_20170204_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	0.98	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	0.67	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Zinc	D	7440-66-6	ND	20	2.5	ug/L	UQP	UJ	H

Analysis Method E245.1**Sample Name** Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall002_20170204_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175633-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	30	5.0	2.5	mg/L			
Nitrate (as N)	N	14797-55-8	0.17	0.11	0.055	mg/L			
Nitrate (as N)	N	14797-55-8	ND	1.1	0.55	mg/L	U	R	D
Nitrite (as N)	N	14797-65-0	ND	1.5	0.70	mg/L	U	R	D
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.17	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	180	5.0	2.5	mg/L			

Analysis Method E314.0**Sample Name** Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/4/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0048	0.0024	ug/L	U	U	

Analysis Method E625

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	6.03	0.503	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.03	2.01	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.03	2.01	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	5.03	1.01	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	5.03	1.01	ug/L	U	U	

Analysis Method EPA-821-R-02-013

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	-68.36			% SURV		J	H

Analysis Method SM2540C

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	490	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	ND	1.1	0.53	mg/L	U	U	

Analysis Method SM4500-CN-E

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method SM5210B

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	BOD		ND	2.0	0.50	mg/L	U	U	

Analysis Method SM5540

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.059	0.10	0.050	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

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Tel: (949)261-1022

TestAmerica Job ID: 440-175633-1

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/4/2017 8:18:46 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/4/2017 8:18:46 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175633-1	Outfall002_20170204_Comp	Water	02/04/17 08:30	02/04/17 12:30
440-175633-3	Outfall002_20170204_Comp_F	Water	02/04/17 08:30	02/04/17 12:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Job ID: 440-175633-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175633-1**

Comments

No additional comments.

Receipt

The samples were received on 2/4/2017 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.4° C, 1.4° C, 1.5° C, 1.6° C, 1.7° C and 1.9° C.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.03	0.503	ug/L		02/07/17 09:45	02/10/17 12:06	1
Bis(2-ethylhexyl) phthalate	ND		5.03	2.01	ug/L		02/07/17 09:45	02/10/17 12:06	1
N-Nitrosodimethylamine	ND		5.03	1.01	ug/L		02/07/17 09:45	02/10/17 12:06	1
Pentachlorophenol	ND		5.03	1.01	ug/L		02/07/17 09:45	02/10/17 12:06	1
2,4-Dinitrotoluene	ND		5.03	2.01	ug/L		02/07/17 09:45	02/10/17 12:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	62		40 - 120	02/07/17 09:45	02/10/17 12:06	1
2-Fluorobiphenyl	57		50 - 120	02/07/17 09:45	02/10/17 12:06	1
2-Fluorophenol	52		30 - 120	02/07/17 09:45	02/10/17 12:06	1
Nitrobenzene-d5	56		45 - 120	02/07/17 09:45	02/10/17 12:06	1
Phenol-d6	53		35 - 120	02/07/17 09:45	02/10/17 12:06	1
Terphenyl-d14	72		37 - 144	02/07/17 09:45	02/10/17 12:06	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0048	0.0024	ug/L		02/09/17 11:08	02/11/17 13:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	46		10 - 150	02/09/17 11:08	02/11/17 13:17	1
DCB Decachlorobiphenyl (Surr)	61		18 - 134	02/09/17 11:08	02/11/17 13:17	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	30		5.0	2.5	mg/L			02/04/17 21:55	10
Nitrate as N	0.17		0.11	0.055	mg/L			02/04/17 21:43	1
Nitrite as N	ND		0.15	0.070	mg/L			02/04/17 21:43	1
Sulfate	180		5.0	2.5	mg/L			02/04/17 21:55	10

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/06/17 11:21	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.17		0.15	0.070	mg/L			02/17/17 12:37	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000095	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,7,8-PeCDD	ND		0.000048	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,7,8-PeCDF	0.00000023	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
2,3,4,7,8-PeCDF	0.00000024	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,4,7,8-HxCDD	0.00000031	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,6,7,8-HxCDD	0.00000064	J,DX MB	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,7,8,9-HxCDD	0.00000039	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000046	J,DX MB	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,6,7,8-HxCDF	0.0000050	J,DX MB	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,7,8,9-HxCDF	0.0000036	J,DX MB	0.000048	0.0000000	ug/L		02/09/17 08:31	02/11/17 08:31	1
2,3,4,6,7,8-HxCDF	0.0000028	J,DX MB	0.000048	0.0000000	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,4,6,7,8-HpCDD	0.0000033	J,DX MB	0.000048	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,4,6,7,8-HpCDF	0.0000014	J,DX MB q	0.000048	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
1,2,3,4,7,8,9-HpCDF	0.0000055	J,DX MB	0.000048	0.0000003	ug/L		02/09/17 08:31	02/11/17 08:31	1
OCDD	0.000020	J,DX MB	0.000095	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
OCDF	0.0000065	J,DX MB	0.000095	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total TCDD	ND		0.000095	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total TCDF	0.0000010	J,DX MB q	0.000095	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total PeCDD	ND		0.000048	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total PeCDF	0.0000048	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total HxCDD	0.0000020	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total HxCDF	0.0000023	J,DX MB q	0.000048	0.0000001	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total HpCDD	0.0000055	J,DX MB	0.000048	0.0000002	ug/L		02/09/17 08:31	02/11/17 08:31	1
Total HpCDF	0.0000058	J,DX MB q	0.000048	0.0000003	ug/L		02/09/17 08:31	02/11/17 08:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	76		25 - 164	02/09/17 08:31	02/11/17 08:31	1
13C-2,3,7,8-TCDF	72		24 - 169	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,7,8-PeCDD	91		25 - 181	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	02/09/17 08:31	02/11/17 08:31	1
13C-2,3,4,7,8-PeCDF	88		21 - 178	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,4,7,8-HxCDD	85		32 - 141	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,6,7,8-HxCDD	90		28 - 130	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,4,7,8-HxCDF	79		26 - 152	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147	02/09/17 08:31	02/11/17 08:31	1
13C-2,3,4,6,7,8-HxCDF	80		28 - 136	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,4,6,7,8-HpCDD	99		23 - 140	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,4,6,7,8-HpCDF	97		28 - 143	02/09/17 08:31	02/11/17 08:31	1
13C-1,2,3,4,7,8,9-HpCDF	106		26 - 138	02/09/17 08:31	02/11/17 08:31	1
13C-OCDD	107		17 - 157	02/09/17 08:31	02/11/17 08:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197	02/09/17 08:31	02/11/17 08:31	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000095	0.0000021	ug/L		02/09/17 08:31	02/16/17 00:47	1
Isotope Dilution									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	73		24 - 169				02/09/17 08:31	02/16/17 00:47	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	79		35 - 197				02/09/17 08:31	02/16/17 00:47	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/13/17 08:20	02/13/17 21:46	1
Copper	1.3	J,DX	2.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:46	1
Lead	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:46	1
Selenium	0.50	J,DX	2.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:46	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/14/17 21:26	02/16/17 21:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	0.83		0.10	0.040	NTU			02/04/17 17:44	1
Total Dissolved Solids	490		10	5.0	mg/L			02/07/17 10:22	1
Total Suspended Solids	ND		1.1	0.53	mg/L			02/07/17 13:26	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/05/17 13:45	02/05/17 21:16	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/09/17 22:17	1
Methylene Blue Active Substances	0.059	J,DX	0.10	0.050	mg/L			02/04/17 17:10	1
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/04/17 15:46	1

Client Sample ID: Outfall002_20170204_Comp_F

Lab Sample ID: 440-175633-3

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/11/17 15:09	02/14/17 17:35	1
Copper	0.98	J,DX QP	2.0	0.50	ug/L		02/11/17 15:09	02/14/17 17:35	1
Lead	ND	QP	1.0	0.50	ug/L		02/11/17 15:09	02/14/17 17:35	1
Selenium	0.67	J,DX QP	2.0	0.50	ug/L		02/11/17 15:09	02/14/17 17:35	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/09/17 14:10	02/11/17 08:45	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestrum	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			995 mL	2 mL	386903	02/07/17 09:45	BMN	TAL IRV
Total/NA	Analysis	625		1			387662	02/10/17 12:06	DF	TAL IRV
Total/NA	Prep	608			1045 mL	2 mL	387433	02/09/17 11:08	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			387787	02/11/17 13:17	JM	TAL IRV
Total/NA	Analysis	300.0		1			386544	02/04/17 21:43	NTN	TAL IRV
Total/NA	Analysis	300.0	DL	10			386544	02/04/17 21:55	NTN	TAL IRV
Total/NA	Analysis	300.0		10			386545	02/04/17 21:55	NTN	TAL IRV
Total/NA	Analysis	314.0		1			386648	02/06/17 11:21	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			388935	02/17/17 12:37	TLN	TAL IRV
Total/NA	Prep	1613B			1051.8 mL	20 uL	149753	02/09/17 08:31	DXD	TAL SAC
Total/NA	Analysis	1613B		1			150147	02/11/17 08:31	SMA	TAL SAC
Total/NA	Prep	1613B	RA		1051.8 mL	20 uL	149753	02/09/17 08:31	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			150794	02/16/17 00:47	JRB	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	387948	02/13/17 08:20	EN	TAL IRV
Total Recoverable	Analysis	200.8		1			388144	02/13/17 21:46	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388305	02/14/17 21:26	DB	TAL IRV
Total/NA	Analysis	245.1		1			388799	02/16/17 21:12	DB	TAL IRV
Total/NA	Analysis	180.1		1			386576	02/04/17 17:44	RB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	386921	02/07/17 10:22	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	386970	02/07/17 13:26	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	386608	02/05/17 13:45	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			386619	02/05/17 21:16	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	387568	02/09/17 22:17	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	386569	02/04/17 17:10	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			386549	02/04/17 15:46	MMH	TAL IRV

Client Sample ID: Outfall002_20170204_Comp_F

Lab Sample ID: 440-175633-3

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387060	02/07/17 17:39	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	387853	02/11/17 15:09	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388278	02/14/17 17:35	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387060	02/07/17 17:39	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	387476	02/09/17 14:10	DB	TAL IRV
Dissolved	Analysis	245.1		1			388013	02/11/17 08:45	DB	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-386903/1-A

Matrix: Water

Analysis Batch: 387662

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 386903

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/07/17 09:45	02/10/17 11:18	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/07/17 09:45	02/10/17 11:18	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/07/17 09:45	02/10/17 11:18	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/07/17 09:45	02/10/17 11:18	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/07/17 09:45	02/10/17 11:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	64		40 - 120	02/07/17 09:45	02/10/17 11:18	1
2-Fluorobiphenyl	59		50 - 120	02/07/17 09:45	02/10/17 11:18	1
2-Fluorophenol	50		30 - 120	02/07/17 09:45	02/10/17 11:18	1
Nitrobenzene-d5	56		45 - 120	02/07/17 09:45	02/10/17 11:18	1
Phenol-d6	54		35 - 120	02/07/17 09:45	02/10/17 11:18	1
Terphenyl-d14	80		37 - 144	02/07/17 09:45	02/10/17 11:18	1

Lab Sample ID: LCS 440-386903/2-A

Matrix: Water

Analysis Batch: 387662

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 386903

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	6.322		ug/L		63	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	8.701		ug/L		87	10 - 150
N-Nitrosodimethylamine	10.0	5.959		ug/L		60	26 - 117
Pentachlorophenol	20.0	14.23		ug/L		71	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	71		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	50		30 - 120
Nitrobenzene-d5	61		45 - 120
Phenol-d6	50		35 - 120
Terphenyl-d14	78		37 - 144

Lab Sample ID: 440-175633-1 MS

Matrix: Water

Analysis Batch: 387662

Client Sample ID: Outfall002_20170204_Comp

Prep Type: Total/NA

Prep Batch: 386903

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.1	6.716		ug/L		67	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.1	8.261		ug/L		82	10 - 150
N-Nitrosodimethylamine	ND		10.1	6.208		ug/L		62	12 - 123
Pentachlorophenol	ND		20.1	15.75		ug/L		78	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	72		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	52		30 - 120
Nitrobenzene-d5	59		45 - 120

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 387662

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 386903

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Phenol-d6	57		35 - 120
Terphenyl-d14	76		37 - 144

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 387662

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 386903

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	
				Result	Qualifier				Limits	RPD	Limit	
2,4,6-Trichlorophenol	ND		10.2	6.371		ug/L		63	37 - 144	5	30	
Bis(2-ethylhexyl) phthalate	ND		10.2	7.704		ug/L		76	10 - 150	7	25	
N-Nitrosodimethylamine	ND		10.2	5.738		ug/L		57	12 - 123	8	35	
Pentachlorophenol	ND		20.3	14.42		ug/L		71	14 - 150	9	25	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	66		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	52		30 - 120
Nitrobenzene-d5	60		45 - 120
Phenol-d6	60		35 - 120
Terphenyl-d14	70		37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-387433/1-A
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387433

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		02/09/17 11:08	02/11/17 12:04	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	44		10 - 150	02/09/17 11:08	02/11/17 12:04	1
DCB Decachlorobiphenyl (Surr)	61		18 - 134	02/09/17 11:08	02/11/17 12:04	1

Lab Sample ID: LCS 440-387433/2-A
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
alpha-BHC	0.200	0.0927		ug/L		46	37 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	44		10 - 150
DCB Decachlorobiphenyl (Surr)	58		18 - 134

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	ND		0.190	0.0913		ug/L		48	40 - 120
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
Tetrachloro-m-xylene	39		10 - 150						
DCB Decachlorobiphenyl (Surr)	65		18 - 134						

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
alpha-BHC	ND		0.190	0.0777		ug/L		41	40 - 120	16	30
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	28		10 - 150								
DCB Decachlorobiphenyl (Surr)	71		18 - 134								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-386544/5
Matrix: Water
Analysis Batch: 386544

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/04/17 12:08	1
Nitrite as N	ND		0.15	0.070	mg/L			02/04/17 12:08	1

Lab Sample ID: LCS 440-386544/4
Matrix: Water
Analysis Batch: 386544

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nitrate as N	1.13	1.06		mg/L		94	90 - 110
Nitrite as N	1.52	1.55		mg/L		102	90 - 110

Lab Sample ID: MB 440-386545/5
Matrix: Water
Analysis Batch: 386545

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/04/17 12:08	1
Sulfate	ND		0.50	0.25	mg/L			02/04/17 12:08	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-386545/4
Matrix: Water
Analysis Batch: 386545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.57		mg/L		91	90 - 110
Sulfate	5.00	4.87		mg/L		97	90 - 110

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 386545

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	30		50.0	74.7		mg/L		89	80 - 120
Sulfate	180		50.0	225		mg/L		82	80 - 120

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 386545

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	30		50.0	75.5		mg/L		90	80 - 120	1	20
Sulfate	180		50.0	227		mg/L		86	80 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography - DL

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 386544

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N - DL	ND		11.3	10.5		mg/L		93	80 - 120
Nitrite as N - DL	ND		15.2	15.1		mg/L		99	80 - 120

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 386544

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N - DL	ND		11.3	11.0		mg/L		97	80 - 120	5	20
Nitrite as N - DL	ND		15.2	15.8		mg/L		104	80 - 120	4	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-386648/3
Matrix: Water
Analysis Batch: 386648

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/06/17 10:02	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: LCS 440-386648/2
Matrix: Water
Analysis Batch: 386648

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

Lab Sample ID: LCSD 440-386648/6
Matrix: Water
Analysis Batch: 386648

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	25.0	25.7		ug/L		103	85 - 115	2	15

Lab Sample ID: MRL 440-386648/5
Matrix: Water
Analysis Batch: 386648

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.61		ug/L		115	75 - 125

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 386648

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.7		ug/L		111	80 - 120

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 386648

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.8		ug/L		111	80 - 120	0	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-149753/1-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 149753

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8-PeCDD	0.00000129	J,DX q	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8-PeCDF	0.00000123	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
2,3,4,7,8-PeCDF	0.00000129	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,4,7,8-HxCDD	0.00000139	J,DX q	0.000050	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,6,7,8-HxCDD	0.00000159	J,DX	0.000050	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8,9-HxCDD	0.00000154	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-149753/1-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 149753

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.00000134	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,6,7,8-HxCDF	0.00000131	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8,9-HxCDF	0.00000161	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
2,3,4,6,7,8-HxCDF	0.00000173	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,4,6,7,8-HpCDD	0.00000204	J,DX	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,4,6,7,8-HpCDF	0.00000178	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,4,7,8,9-HpCDF	0.00000158	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
OCDD	0.00000584	J,DX	0.00010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
OCDF	0.00000319	J,DX q	0.00010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total TCDD	0.000000267	J,DX q	0.000010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total TCDF	0.00000102	J,DX	0.000010	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total PeCDD	0.00000129	J,DX q	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total PeCDF	0.00000252	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total HxCDD	0.00000452	J,DX q	0.000050	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total HxCDF	0.00000599	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total HpCDD	0.00000302	J,DX	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
Total HpCDF	0.00000336	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	65		25 - 164	02/09/17 08:31	02/10/17 22:47	1
13C-2,3,7,8-TCDF	60		24 - 169	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,7,8-PeCDD	74		25 - 181	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	02/09/17 08:31	02/10/17 22:47	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	02/09/17 08:31	02/10/17 22:47	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,6,7,8-HpCDD	77		23 - 140	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,6,7,8-HpCDF	76		28 - 143	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138	02/09/17 08:31	02/10/17 22:47	1
13C-OCDD	80		17 - 157	02/09/17 08:31	02/10/17 22:47	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-149753/1-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 149753

Surrogate	MB MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD		88		35 - 197	02/09/17 08:31	02/10/17 22:47	1

Lab Sample ID: LCS 320-149753/2-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 149753

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000184		ug/L		92	67 - 158
2,3,7,8-TCDF	0.000200	0.000196	MB	ug/L		98	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000926	MB	ug/L		93	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000927	MB	ug/L		93	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000869	MB	ug/L		87	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000814	MB	ug/L		81	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000864	MB	ug/L		86	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000832	MB	ug/L		83	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000874	MB	ug/L		87	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000898	MB	ug/L		90	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000897	MB	ug/L		90	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000916	MB	ug/L		92	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000920	MB	ug/L		92	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000856	MB	ug/L		86	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000813	MB	ug/L		81	78 - 138
OCDD	0.00200	0.00174	MB	ug/L		87	78 - 144
OCDF	0.00200	0.00178	MB	ug/L		89	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	62		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDF	61		21 - 159
13C-1,2,3,7,8,9-HxCDF	60		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	80		20 - 186
13C-OCDD	77		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	89		31 - 191

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-149753/3-A

Matrix: Water

Analysis Batch: 150146

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 149753

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000206		ug/L		103	67 - 158	11	50
2,3,7,8-TCDF	0.000200	0.000204	MB	ug/L		102	75 - 158	4	50
1,2,3,7,8-PeCDD	0.00100	0.00103	MB	ug/L		103	70 - 142	11	50
1,2,3,7,8-PeCDF	0.00100	0.00101	MB	ug/L		101	80 - 134	9	50
2,3,4,7,8-PeCDF	0.00100	0.000979	MB	ug/L		98	68 - 160	12	50
1,2,3,4,7,8-HxCDD	0.00100	0.000983	MB	ug/L		98	70 - 164	19	50
1,2,3,6,7,8-HxCDD	0.00100	0.000973	MB	ug/L		97	76 - 134	12	50
1,2,3,7,8,9-HxCDD	0.00100	0.000987	MB	ug/L		99	64 - 162	17	50
1,2,3,4,7,8-HxCDF	0.00100	0.000983	MB	ug/L		98	72 - 134	12	50
1,2,3,6,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	84 - 130	12	50
1,2,3,7,8,9-HxCDF	0.00100	0.00104	MB	ug/L		104	78 - 130	15	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103	MB	ug/L		103	70 - 156	12	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00105	MB	ug/L		105	70 - 140	13	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000952	MB	ug/L		95	82 - 122	11	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000927	MB	ug/L		93	78 - 138	13	50
OCDD	0.00200	0.00195	MB	ug/L		97	78 - 144	11	50
OCDF	0.00200	0.00203	MB	ug/L		102	63 - 170	13	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	66		22 - 152
13C-1,2,3,7,8-PeCDD	80		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	77		13 - 328
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,6,7,8-HxCDD	74		25 - 163
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDF	64		21 - 159
13C-1,2,3,7,8,9-HxCDF	64		17 - 205
13C-2,3,4,6,7,8-HxCDF	68		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	79		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	82		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	87		20 - 186
13C-OCDD	84		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	92		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-149753/1-A

Matrix: Water

Analysis Batch: 150794

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 149753

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000036	ug/L		02/09/17 08:31	02/15/17 21:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDF - RA	59	Qualifier	24 - 169	02/09/17 08:31	02/15/17 21:00	1

<i>Surrogate</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD - RA	83	Qualifier	35 - 197	02/09/17 08:31	02/15/17 21:00	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-387948/1-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 387948

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Cadmium	ND	Qualifier	1.0	0.25	ug/L	-	02/13/17 08:20	02/13/17 21:41	1
Copper	ND	Qualifier	2.0	0.50	ug/L	-	02/13/17 08:20	02/13/17 21:41	1
Lead	ND	Qualifier	1.0	0.50	ug/L	-	02/13/17 08:20	02/13/17 21:41	1
Selenium	ND	Qualifier	2.0	0.50	ug/L	-	02/13/17 08:20	02/13/17 21:41	1

Lab Sample ID: LCS 440-387948/2-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 387948

<i>Analyte</i>	<i>Spike</i>	<i>LCS</i>	<i>LCS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>Limits</i>
Cadmium	80.0	Result	78.7	ug/L	-	98	85 - 115	-
Copper	80.0	Result	81.5	ug/L	-	102	85 - 115	-
Lead	80.0	Result	79.8	ug/L	-	100	85 - 115	-
Selenium	80.0	Result	80.0	ug/L	-	100	85 - 115	-

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total Recoverable
Prep Batch: 387948

<i>Analyte</i>	<i>Sample</i>	<i>Sample</i>	<i>Spike</i>	<i>MS</i>	<i>MS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>Limits</i>
Cadmium	ND	Qualifier	80.0	Result	78.9	ug/L	-	99	70 - 130	-
Copper	1.3	J,DX	80.0	Result	81.4	ug/L	-	100	70 - 130	-
Lead	ND	Qualifier	80.0	Result	83.3	ug/L	-	104	70 - 130	-
Selenium	0.50	J,DX	80.0	Result	83.0	ug/L	-	103	70 - 130	-

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total Recoverable
Prep Batch: 387948

<i>Analyte</i>	<i>Sample</i>	<i>Sample</i>	<i>Spike</i>	<i>MSD</i>	<i>MSD</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
Cadmium	ND	Qualifier	80.0	Result	77.7	ug/L	-	97	70 - 130	2	20	
Copper	1.3	J,DX	80.0	Result	79.0	ug/L	-	97	70 - 130	3	20	
Lead	ND	Qualifier	80.0	Result	79.4	ug/L	-	99	70 - 130	5	20	
Selenium	0.50	J,DX	80.0	Result	79.7	ug/L	-	99	70 - 130	4	20	

Lab Sample ID: MB 440-387060/1-C
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 387853

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Cadmium	ND	Qualifier	1.0	0.25	ug/L	-	02/11/17 15:09	02/14/17 17:29	1
Copper	ND	Qualifier	2.0	0.50	ug/L	-	02/11/17 15:09	02/14/17 17:29	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-387060/1-C
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 387853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.0	0.50	ug/L		02/11/17 15:09	02/14/17 17:29	1
Selenium	ND		2.0	0.50	ug/L		02/11/17 15:09	02/14/17 17:29	1

Lab Sample ID: LCS 440-387060/2-C
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 387853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.3		ug/L		95	85 - 115
Copper	80.0	77.0		ug/L		96	85 - 115
Lead	80.0	76.0		ug/L		95	85 - 115
Selenium	80.0	74.6		ug/L		93	85 - 115

Lab Sample ID: 440-175633-3 MS
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Outfall002_20170204_Comp_F
Prep Type: Dissolved
Prep Batch: 387853

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	74.7		ug/L		93	70 - 130
Copper	0.98	J,DX QP	80.0	74.1		ug/L		91	70 - 130
Lead	ND	QP	80.0	72.3		ug/L		90	70 - 130
Selenium	0.67	J,DX QP	80.0	73.3		ug/L		91	70 - 130

Lab Sample ID: 440-175633-3 MSD
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Outfall002_20170204_Comp_F
Prep Type: Dissolved
Prep Batch: 387853

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	73.1		ug/L		91	70 - 130	2	20
Copper	0.98	J,DX QP	80.0	73.2		ug/L		90	70 - 130	1	20
Lead	ND	QP	80.0	72.8		ug/L		91	70 - 130	1	20
Selenium	0.67	J,DX QP	80.0	72.7		ug/L		90	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388305/1-A
Matrix: Water
Analysis Batch: 388799

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388305

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/14/17 21:26	02/16/17 21:07	1

Lab Sample ID: LCS 440-388305/2-A
Matrix: Water
Analysis Batch: 388799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388305

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.49		ug/L		106	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-175633-1 MS

Matrix: Water

Analysis Batch: 388799

Client Sample ID: Outfall002_20170204_Comp

Prep Type: Total/NA

Prep Batch: 388305

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.34		ug/L		104	70 - 130

Lab Sample ID: 440-175633-1 MSD

Matrix: Water

Analysis Batch: 388799

Client Sample ID: Outfall002_20170204_Comp

Prep Type: Total/NA

Prep Batch: 388305

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.35		ug/L		104	70 - 130	0	20

Lab Sample ID: MB 440-387060/1-B

Matrix: Water

Analysis Batch: 388013

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 387476

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/09/17 14:10	02/11/17 08:39	1

Lab Sample ID: LCS 440-387060/2-B

Matrix: Water

Analysis Batch: 388013

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Prep Batch: 387476

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.25		ug/L		103	85 - 115

Lab Sample ID: 440-175633-3 MS

Matrix: Water

Analysis Batch: 388013

Client Sample ID: Outfall002_20170204_Comp_F

Prep Type: Dissolved

Prep Batch: 387476

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.52		ug/L		107	70 - 130

Lab Sample ID: 440-175633-3 MSD

Matrix: Water

Analysis Batch: 388013

Client Sample ID: Outfall002_20170204_Comp_F

Prep Type: Dissolved

Prep Batch: 387476

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.39		ug/L		105	70 - 130	2	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-386576/5

Matrix: Water

Analysis Batch: 386576

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/04/17 17:44	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 180.1 - Turbidity, Nephelometric (Continued)

Lab Sample ID: MRL 440-386576/4
Matrix: Water
Analysis Batch: 386576

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Turbidity	0.100	0.110		NTU		110	50 - 150

Lab Sample ID: 440-175531-G-2 DU
Matrix: Water
Analysis Batch: 386576

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	12		11.6		NTU		0.5	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-386921/1
Matrix: Water
Analysis Batch: 386921

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/07/17 10:22	1

Lab Sample ID: LCS 440-386921/2
Matrix: Water
Analysis Batch: 386921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	940		mg/L		94	90 - 110

Lab Sample ID: 440-175633-1 DU
Matrix: Water
Analysis Batch: 386921

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	490		490		mg/L		0.2	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-386970/1
Matrix: Water
Analysis Batch: 386970

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/07/17 13:26	1

Lab Sample ID: LCS 440-386970/2
Matrix: Water
Analysis Batch: 386970

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1110		mg/L		111	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-175647-D-1 DU
Matrix: Water
Analysis Batch: 386970

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	200		206		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-386608/1-A
Matrix: Water
Analysis Batch: 386619

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386608

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/05/17 13:45	02/05/17 21:16	1

Lab Sample ID: LCS 440-386608/2-A
Matrix: Water
Analysis Batch: 386619

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386608

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	102		ug/L		102	90 - 110

Lab Sample ID: LCSD 440-386608/3-A
Matrix: Water
Analysis Batch: 386619

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386608

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	102		ug/L		102	90 - 110	1	10

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 386619

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 386608

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	101		ug/L		101	70 - 115

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 386619

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 386608

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-387568/12
Matrix: Water
Analysis Batch: 387568

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/09/17 22:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: LCS 440-387568/13
Matrix: Water
Analysis Batch: 387568

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	4.810		mg/L		96	90 - 110

Lab Sample ID: MRL 440-387568/11
Matrix: Water
Analysis Batch: 387568

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.1300	J,DX	mg/L		65	10 - 200

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 387568

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	4.910		mg/L		98	90 - 110

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 387568

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	4.880		mg/L		98	90 - 110	1	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-386569/3
Matrix: Water
Analysis Batch: 386569

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/04/17 17:10	1

Lab Sample ID: LCS 440-386569/4
Matrix: Water
Analysis Batch: 386569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.240		mg/L		96	90 - 110

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 386569

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.059	J,DX	0.250	0.279		mg/L		88	50 - 125

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 386569

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.059	J,DX	0.250	0.276		mg/L		87	50 - 125	1	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-386549/1
Matrix: Water
Analysis Batch: 386549

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/04/17 12:03	1

Lab Sample ID: LCS 440-386549/4
Matrix: Water
Analysis Batch: 386549

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	182		mg/L		92	85 - 115

Lab Sample ID: LCSD 440-386549/5
Matrix: Water
Analysis Batch: 386549

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	186		mg/L		94	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

GC/MS Semi VOA

Prep Batch: 386903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	625	
MB 440-386903/1-A	Method Blank	Total/NA	Water	625	
LCS 440-386903/2-A	Lab Control Sample	Total/NA	Water	625	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	625	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	625	

Analysis Batch: 387662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	625	386903
MB 440-386903/1-A	Method Blank	Total/NA	Water	625	386903
LCS 440-386903/2-A	Lab Control Sample	Total/NA	Water	625	386903
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	625	386903
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	625	386903

GC Semi VOA

Prep Batch: 387433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	608	
MB 440-387433/1-A	Method Blank	Total/NA	Water	608	
LCS 440-387433/2-A	Lab Control Sample	Total/NA	Water	608	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	608	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	608	

Analysis Batch: 387787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	608 Pesticides	387433
MB 440-387433/1-A	Method Blank	Total/NA	Water	608 Pesticides	387433
LCS 440-387433/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	387433
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	608 Pesticides	387433
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	608 Pesticides	387433

HPLC/IC

Analysis Batch: 386544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	300.0	
440-175633-1 - DL	Outfall002_20170204_Comp	Total/NA	Water	300.0	
MB 440-386544/5	Method Blank	Total/NA	Water	300.0	
LCS 440-386544/4	Lab Control Sample	Total/NA	Water	300.0	
440-175633-1 MS - DL	Outfall002_20170204_Comp	Total/NA	Water	300.0	
440-175633-1 MSD - DL	Outfall002_20170204_Comp	Total/NA	Water	300.0	

Analysis Batch: 386545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	300.0	
MB 440-386545/5	Method Blank	Total/NA	Water	300.0	
LCS 440-386545/4	Lab Control Sample	Total/NA	Water	300.0	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	300.0	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

HPLC/IC (Continued)

Analysis Batch: 386648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	314.0	
MB 440-386648/3	Method Blank	Total/NA	Water	314.0	
LCS 440-386648/2	Lab Control Sample	Total/NA	Water	314.0	
LCS D 440-386648/6	Lab Control Sample Dup	Total/NA	Water	314.0	
MRL 440-386648/5	Lab Control Sample	Total/NA	Water	314.0	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	314.0	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	314.0	

Analysis Batch: 388935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 149753

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	1613B	
440-175633-1 - RA	Outfall002_20170204_Comp	Total/NA	Water	1613B	
MB 320-149753/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-149753/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-149753/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS D 320-149753/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 150146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-149753/1-A	Method Blank	Total/NA	Water	1613B	149753
LCS 320-149753/2-A	Lab Control Sample	Total/NA	Water	1613B	149753
LCS D 320-149753/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	149753

Analysis Batch: 150147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	1613B	149753

Analysis Batch: 150794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1 - RA	Outfall002_20170204_Comp	Total/NA	Water	1613B	149753
MB 320-149753/1-A - RA	Method Blank	Total/NA	Water	1613B	149753

Metals

Filtration Batch: 387060

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	FILTRATION	
MB 440-387060/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-387060/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-387060/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-387060/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	FILTRATION	
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Metals (Continued)

Prep Batch: 387476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	245.1	387060
MB 440-387060/1-B	Method Blank	Dissolved	Water	245.1	387060
LCS 440-387060/2-B	Lab Control Sample	Dissolved	Water	245.1	387060
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	245.1	387060
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	245.1	387060

Prep Batch: 387853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	200.2	387060
MB 440-387060/1-C	Method Blank	Dissolved	Water	200.2	387060
LCS 440-387060/2-C	Lab Control Sample	Dissolved	Water	200.2	387060
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	200.2	387060
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	200.2	387060

Prep Batch: 387948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total Recoverable	Water	200.2	
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175633-1 MS	Outfall002_20170204_Comp	Total Recoverable	Water	200.2	
440-175633-1 MSD	Outfall002_20170204_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 388013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	245.1	387476
MB 440-387060/1-B	Method Blank	Dissolved	Water	245.1	387476
LCS 440-387060/2-B	Lab Control Sample	Dissolved	Water	245.1	387476
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	245.1	387476
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	245.1	387476

Analysis Batch: 388144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total Recoverable	Water	200.8	387948
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.8	387948
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.8	387948
440-175633-1 MS	Outfall002_20170204_Comp	Total Recoverable	Water	200.8	387948
440-175633-1 MSD	Outfall002_20170204_Comp	Total Recoverable	Water	200.8	387948

Analysis Batch: 388278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	200.8	387853
MB 440-387060/1-C	Method Blank	Dissolved	Water	200.8	387853
LCS 440-387060/2-C	Lab Control Sample	Dissolved	Water	200.8	387853
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	200.8	387853
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	200.8	387853

Prep Batch: 388305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	245.1	
MB 440-388305/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388305/2-A	Lab Control Sample	Total/NA	Water	245.1	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Metals (Continued)

Prep Batch: 388305 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	245.1	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	245.1	

Analysis Batch: 388799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	245.1	388305
MB 440-388305/1-A	Method Blank	Total/NA	Water	245.1	388305
LCS 440-388305/2-A	Lab Control Sample	Total/NA	Water	245.1	388305
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	245.1	388305
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	245.1	388305

General Chemistry

Analysis Batch: 386549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	SM5210B	
USB 440-386549/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-386549/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-386549/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 386569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	SM 5540C	
MB 440-386569/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-386569/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	SM 5540C	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	SM 5540C	

Analysis Batch: 386576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	180.1	
MB 440-386576/5	Method Blank	Total/NA	Water	180.1	
MRL 440-386576/4	Lab Control Sample	Total/NA	Water	180.1	
440-175531-G-2 DU	Duplicate	Total/NA	Water	180.1	

Prep Batch: 386608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	Distill/CN	
MB 440-386608/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-386608/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-386608/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	Distill/CN	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	Distill/CN	

Analysis Batch: 386619

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	SM 4500 CN E	386608
MB 440-386608/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	386608
LCS 440-386608/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	386608
LCSD 440-386608/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	386608

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

General Chemistry (Continued)

Analysis Batch: 386619 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	SM 4500 CN E	386608
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	SM 4500 CN E	386608

Analysis Batch: 386921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	SM 2540C	
MB 440-386921/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-386921/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-175633-1 DU	Outfall002_20170204_Comp	Total/NA	Water	SM 2540C	

Analysis Batch: 386970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	SM 2540D	
MB 440-386970/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-386970/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-175647-D-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 387568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-387568/12	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-387568/13	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-387568/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	SM 4500 NH3 G	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 28, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall002_20170204_Comp (440-175633-1)
DATE RECEIVED: 6 Feb - 17
ABC LAB NO.: TAM0217.029

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = -68.36 %

Yours very truly,

Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 24 Feb-17 10:51 (p 1 of 1)
 Test Code: TAM0217.029set | 19-2974-6741

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 11-9535-1048	Test Type: Cell Growth	Analyst:
Start Date: 06 Feb-17 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 10 Feb-17 11:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-4750-7024	Code: TAM0217.029s	Client: Test America Irvine
Sample Date: 04 Feb-17 08:30	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 06 Feb-17 11:42	Source: Bioassay Report	
Sample Age: 52h (1.8 °C)	Station: Outfall002_20170204_Comp (440-175633-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
07-8896-1126	Cell Density	TST-Welch's t Test	<1.0E-37	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-8896-1126	Cell Density	Control CV	0.04178	<<	0.2	Yes	Passes Criteria
07-8896-1126	Cell Density	Control Resp	1.31E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.312E+6	1.267E+6	1.358E+6	1.241E+6	1.394E+6	1.939E+4	5.484E+4	4.18%	0.00%
100		8	2.210E+6	2.076E+6	2.343E+6	1.960E+6	2.497E+6	5.640E+4	1.595E+5	7.22%	-68.36%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.244E+6	1.304E+6	1.394E+6	1.361E+6	1.241E+6	1.282E+6	1.342E+6	1.332E+6
100		2.320E+6	2.244E+6	2.132E+6	2.149E+6	2.256E+6	2.497E+6	1.960E+6	2.120E+6

CETIS Analytical Report

Report Date: 24 Feb-17 10:51 (p 1 of 2)
 Test Code: TAM0217.029sel | 19-2974-6741

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 07-8896-1126	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Analized: 24 Feb-17 10:51	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 11-9535-1048	Test Type: Cell Growth	Analyst:	Start Date: 06 Feb-17 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 10 Feb-17 11:00	Species: Selenastrum capricornutum	Brine: Not Applicable	Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-4750-7024	Code: TAM0217.029s	Client: Test America Irvine	Sample Date: 04 Feb-17 08:30	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 06 Feb-17 11:42	Source: Bioassay Report		Sample Age: 52h (1.8 °C)	Station: Outfall002_20170204_Comp (440-175633-	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	21.04	0.7111	7	CDF	<1.0E-37	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04178	<<	0.2	Yes	Passes Criteria
Control Resp	1.31E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.220E+12	3.220E+12	1	226.3	<1.0E-37	Significant Effect
Error	1.992E+11	1.423E+10	14			
Total	3.419E+12		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	4.539	8.862	0.0513	Equal Variances
Variances	Mod Levene Equality of Variance Test	4.433	8.862	0.0538	Equal Variances
Variances	Variance Ratio F Test	8.462	8.885	0.0115	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5608	3.878	0.1508	Normal Distribution
Distribution	D'Agostino Skewness Test	0.7545	2.576	0.4506	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1555	0.2471	0.3905	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9325	0.8408	0.2673	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.312E+6	1.267E+6	1.358E+6	1.318E+6	1.241E+6	1.394E+6	1.939E+4	4.18%	0.00%
100		8	2.210E+6	2.076E+6	2.343E+6	2.196E+6	1.960E+6	2.497E+6	5.640E+4	7.22%	-68.36%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.244E+6	1.304E+6	1.394E+6	1.361E+6	1.241E+6	1.282E+6	1.342E+6	1.332E+6
100		2.320E+6	2.244E+6	2.132E+6	2.149E+6	2.256E+6	2.497E+6	1.960E+6	2.120E+6

CETIS Measurement Report

Report Date: 24 Feb-17 10:51 (p 1 of 2)
Test Code: TAM0217.029sel | 19-2974-6741

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 11-9535-1048	Test Type: Cell Growth	Analyst:
Start Date: 06 Feb-17 13:00	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 10 Feb-17 11:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-4750-7024	Code: TAM0217.029s	Client: Test America Irvine
Sample Date: 04 Feb-17 08:30	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 06 Feb-17 11:42	Source: Bioassay Report	
Sample Age: 52h (1.8 °C)	Station: Outfall002_20170204_Comp (440-175633-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	182			182	182	0	0	0.0%	0
Overall		2	125	-599.3	849.3	68	182	57	80.61	64.49%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	436.2	426.8	445.6	425	445	3.382	7.563	1.73%	0
100		5	846.6	840	853.2	843	856	2.379	5.32	0.63%	0
Overall		10	641.4	486.6	796.2	425	856	68.43	216.4	33.74%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
100		1	250			250	250	0	0	0.0%	0
Overall		2	174.5	-784.8	1134	99	250	75.5	106.8	61.19%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.58	7.376	7.784	7.4	7.7	0.07349	0.1643	2.17%	0
100		5	7.78	7.618	7.942	7.7	8	0.05831	0.1304	1.68%	0
Overall		10	7.68	7.555	7.805	7.4	8	0.05538	0.1751	2.28%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.1	23.98	24.22	24	24.2	0.04468	0.09992	0.41%	0
100		5	24.1	23.98	24.22	24	24.2	0.04468	0.09992	0.41%	0
Overall		10	24.1	24.03	24.17	24	24.2	0.02981	0.09428	0.39%	0 (0%)

CETIS Measurement Report

Report Date: 24 Feb-17 10:51 (p 2 of 2)
Test Code: TAM0217.029sel | 19-2974-6741

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	68
100		182

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	425	433	439	439	445
100		856	845	845	843	844

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	99
100		250

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.7	7.7	7.7	7.4	7.4
100		7.8	7.7	8	7.7	7.7

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.2	24	24.2	24.1	24
100		24.2	24	24.2	24.1	24



CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017


STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria	

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)

Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-5258-0943

Endpoint: Cell Density

CETIS Version: CETISv1.9.2

Analyzed: 19 Jan-17 16:21

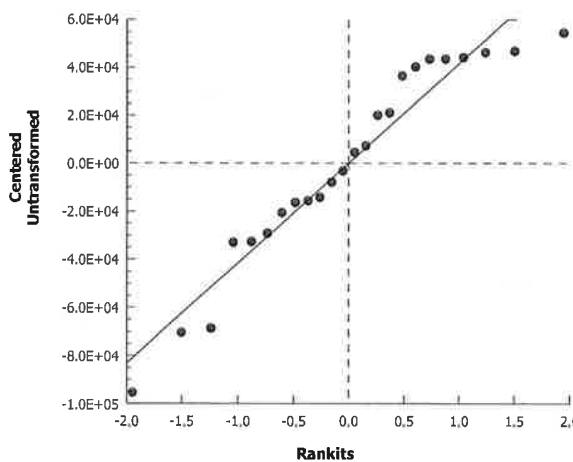
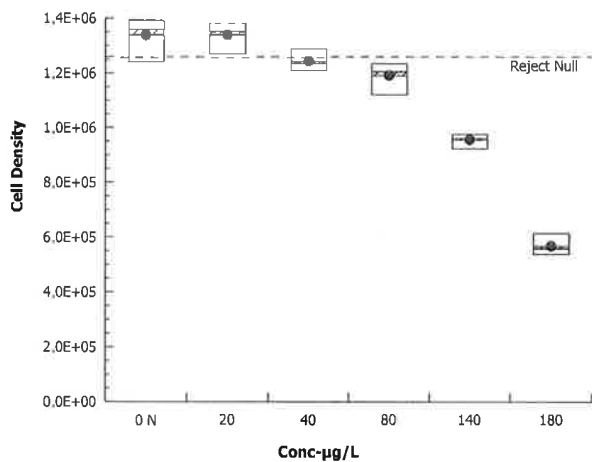
Analysis: Parametric-Control vs Treatments

Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 002 Comp		ANALYSIS REQUIRED		Comments									
Test America Contact: Urvashti Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		Filter and preserve w/in 24hrs of receipt at lab. Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year									
Sampler: NDENSON		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		Filter and preserve w/in 24hrs of receipt at lab. Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year									
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Yes	No	Turn-around time: (Check)	24 Hour	72 Hour	10 Day	Normal
Outfall 002	Outfall002_20170204_Comp_F	2/4/2017	WM	1L Poly	3	None	200	Yes							
			WM	borosilicate vial	3	None	320	Yes							
			WM	500 mL Poly	3	NaOH	220	Yes							
			WM	2.5 Gal Cube	3	None	225	Yes							
			WM	11 Gall Amber	3	None	230	Yes							
			WM	1 Gal Cube	6	None	235	No							
Relinquished By: [Signature]		Date/Time: 2-4-17		Company: 8945		Received By: [Signature]		Date/Time: 2/4/17		Company: 8945		Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____			
Relinquished By: [Signature]		Date/Time: 2/4/17		Company: 1280		Received By: [Signature]		Date/Time: 2/4/17		Company: 1236		Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months. Data Requirements: (Check) No Level IV: _____ All Level IV: _____			
Relinquished By: [Signature]		Date/Time: 1/2/15		Company: 306		Received By: [Signature]		Date/Time: 1/4/17		Company: 306		Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____			

ATC 2/4/17 TL

1/3/14 1/2/15 1/4/17 306
 1/5/14 1/11/14 1/11/14



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Patel, Urvashi		Carrier Tracking No(s): 440-107204-1	
Client Contact: TestAmerica Laboratories, Inc.		E-Mail: urvashi.patel@testamericainc.com		Page 1 of 1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Job #: 440-175633-1	
City: West Sacramento		State: CA		Preservation Codes:	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - Nitrous Acid F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecaldehyde U - Acetone V - MCAA W - pH 4.5 Z - other (specify)	
Site: SSOWW		Due Date Requested: 2/16/2017		Other:	
Sample Identification - Client ID (Lab ID)		TAT Requested (days):		Total Number of Containers	
Outfall002_20170204_Comp (440-175633-1)	Sample Date: 2/4/17	Sample Time: 06:30 Pacific	Field Filtered Sample (Yes or No):	Perform MS/MSD (Yes or No):	Special Instructions/Note:
			X	X	See OAS, Boeing wiu to zero, ug/L. Use Boeing glassware.
					2 MS NB
					2 MSD VB
<p>Possible Hazard Identification</p> <p>Unconfirmed</p> <p>Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2</p> <p>Empty Kit Relinquished by: _____ Date: _____</p> <p>Relinquished by: <i>S. Bayala</i> Date/Time: 2/6/17 17:00 Company: TAI</p> <p>Relinquished by: <i>Fed Ex</i> Date/Time: 2/7/17 00:00 Company: TAI</p> <p>Relinquished by: _____ Date/Time: _____ Company: _____</p> <p>Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____</p> <p>Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks: <i>φ.1°C gce</i></p>					
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <p><input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements:</p>					

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175633-1

Login Number: 175633

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175633-1

Login Number: 175633

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/07/17 04:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-175633-1	Outfall002_20170204_Comp		76		72		91		78
440-175633-1 - RA	Outfall002_20170204_Comp				73				
MB 320-149753/1-A	Method Blank		65		60		74		64
MB 320-149753/1-A - RA	Method Blank				59				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-175633-1	Outfall002_20170204_Comp		88		85		90		79
440-175633-1 - RA	Outfall002_20170204_Comp								
MB 320-149753/1-A	Method Blank		73		69		71		64
MB 320-149753/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-175633-1	Outfall002_20170204_Comp		76		74		80	99	
440-175633-1 - RA	Outfall002_20170204_Comp								
MB 320-149753/1-A	Method Blank		62		61		65	77	
MB 320-149753/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-175633-1	Outfall002_20170204_Comp		97		106		107
440-175633-1 - RA	Outfall002_20170204_Comp						
MB 320-149753/1-A	Method Blank		76		80		80
MB 320-149753/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-149753/2-A	Lab Control Sample	65	62	77	67	76	69	71	63
LCSD 320-149753/3-A	Lab Control Sample Dup	67	66	80	70	77	70	74	66

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-149753/2-A	Lab Control Sample	61	60	64	74	75	80	77
LCSD 320-149753/3-A	Lab Control Sample Dup	64	64	68	79	82	87	84

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175633-2

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/7/2017 10:43:37 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/7/2017 10:43:37 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175633-1	Outfall002_20170204_Comp	Water	02/04/17 08:30	02/04/17 12:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Job ID: 440-175633-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175633-2**

Comments

No additional comments.

Receipt

The samples were received on 2/4/2017 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.4° C, 1.4° C, 1.5° C, 1.6° C, 1.7° C and 1.9° C.

RAD

Method(s) 900.0: Gross alpha/beta Batch 295075:

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size, which can be attributed to high residual mass: Outfall002_20170204_Comp (440-175633-1). Analytical results are reported with the detection limit achieved.

Method(s) 900.0: Gross alpha/beta Batch 295075:

The gross beta matrix spike / matrix spike duplicate (MSBT/MSBTD) replicated error ratio for preparation batch 160-295075 and analytical batch 160-296007 was outside control limits of 1.0 (1.44). Duplicate precision is demonstrated by an acceptable relative percent difference, within the control limit of 40% (32%). Analytical results are reported.

Method(s) Evaporation: Gross Alpha/Beta Prep Batch: 160-295075

The following samples Outfall002_20170204_Comp (440-175633-1), Outfall002_20170204_Comp (440-175633-1[MS]), Outfall002_20170204_Comp (440-175633-1[MSD]) and (440-175633-AD-1 MSBT) had a final mass above 100mg. A 1:2 dilution was performed. the dilution factor is represented in the initial amount used.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.524	U G	2.52	2.53	3.00	5.03	pCi/L	02/28/17 10:05	03/05/17 19:52	1
Gross Beta	4.66	F	1.41	1.48	4.00	1.79	pCi/L	02/28/17 10:05	03/05/17 19:52	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	6.01	U	10.4	10.4	20.0	17.5	pCi/L	02/10/17 14:45	02/13/17 17:56	1
Potassium-40	52.0	U	98.2	98.4		161	pCi/L	02/10/17 14:45	02/13/17 17:56	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0630	U	0.128	0.129	1.00	0.232	pCi/L	02/09/17 15:19	03/03/17 08:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	70.2		40 - 110					02/09/17 15:19	03/03/17 08:03	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.00302	U	0.321	0.321	1.00	0.574	pCi/L	02/09/17 15:51	03/01/17 11:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	70.2		40 - 110					02/09/17 15:51	03/01/17 11:03	1
Y Carrier	84.9		40 - 110					02/09/17 15:51	03/01/17 11:03	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.345	U	0.292	0.293	3.00	0.468	pCi/L	02/16/17 09:55	02/27/17 11:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	64.0		40 - 110					02/16/17 09:55	02/27/17 11:11	1
Y Carrier	85.2		40 - 110					02/16/17 09:55	02/27/17 11:11	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-118	U	172	172	500	323	pCi/L	02/23/17 10:45	02/24/17 19:29	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	2.62		0.493	0.516	1.00	0.119	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.4		30 - 110					02/21/17 13:19	02/24/17 17:20	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			100 mL	1.0 g	295075	02/28/17 10:05	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	296007	03/05/17 19:52	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	291958	02/10/17 14:45	JDL	TAL SL
Total/NA	Analysis	901.1		1			292041	02/13/17 17:56	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.09 mL	1.0 g	291755	02/09/17 15:19	MBC	TAL SL
Total/NA	Analysis	903.0		1			295725	03/03/17 08:03	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.09 mL	1.0 g	291762	02/09/17 15:51	MBC	TAL SL
Total/NA	Analysis	904.0		1			295280	03/01/17 11:03	ALD	TAL SL
Total/NA	Prep	PrecSep-7			1000.39 mL	1.0 g	292776	02/16/17 09:55	BME	TAL SL
Total/NA	Analysis	905		1			294480	02/27/17 11:11	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.2 mL	1.0 g	294253	02/23/17 10:45	JDL	TAL SL
Total/NA	Analysis	906.0		1			294715	02/24/17 19:29	MLK	TAL SL
Total/NA	Prep	ExtChrom			499.49 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294619	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-295075/1-A
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295075

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.1919	U	0.602	0.603	3.00	1.19	pCi/L	02/28/17 10:05	03/05/17 19:51	1
Gross Beta	-0.06449	U	0.497	0.497	4.00	0.906	pCi/L	02/28/17 10:05	03/05/17 19:51	1

Lab Sample ID: LCS 160-295075/2-A
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	43.45		6.39	3.00	1.90	pCi/L	87	73 - 133

Lab Sample ID: LCSB 160-295075/3-A
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.0	94.43		9.97	4.00	0.919	pCi/L	104	75 - 125

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	-0.524	U G	49.9	33.41		6.57	3.00	3.34	pCi/L	67	60 - 140

Lab Sample ID: 440-175633-1 MSBT
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	4.66	F	91.0	108.4		12.0	4.00	2.36	pCi/L	114	60 - 140

Lab Sample ID: 440-175633-1 MSBTD
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Beta	4.66	F	91.0	78.43	F	8.92	4.00	2.13	pCi/L	81	60 - 140	1.44	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 296194

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	-0.524	U G	49.9	38.67		7.51	3.00	4.49	pCi/L	77	60 - 140	0.37	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-291958/1-A
Matrix: Water
Analysis Batch: 292041

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 291958

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	4.657	U	8.16	8.17	20.0	13.8	pCi/L	02/10/17 14:45	02/13/17 08:57	1
Potassium-40	23.76	U	127	127		185	pCi/L	02/10/17 14:45	02/13/17 08:57	1

Lab Sample ID: LCS 160-291958/2-A
Matrix: Water
Analysis Batch: 292041

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 291958

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	137000		15800		439	pCi/L	100	90 - 111
Cesium-137	47000	47960		4770	20.0	141	pCi/L	102	90 - 111
Cobalt-60	39800	39410		3890		103	pCi/L	99	89 - 110

Lab Sample ID: 440-175633-1 DU
Matrix: Water
Analysis Batch: 292011

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 291958

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	6.01	U	0.1070	U	10.7	20.0	19.5	pCi/L		0.28	1
Potassium-40	52.0	U	-15.17	U	164		238	pCi/L		0.26	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-291755/1-A
Matrix: Water
Analysis Batch: 295722

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 291755

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.03004	U	0.103	0.103	1.00	0.221	pCi/L	02/09/17 15:19	03/03/17 07:59	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.7		40 - 110					02/09/17 15:19	03/03/17 07:59	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-291755/2-A
Matrix: Water
Analysis Batch: 295722

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 291755

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	10.28		1.21	1.00	0.266	pCi/L	91	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	83.8		40 - 110							

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 295725

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 291755

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0630	U	11.3	8.999		1.11	1.00	0.226	pCi/L	80	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	73.7		40 - 110								

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 295725

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 291755

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0630	U	11.2	8.466		1.05	1.00	0.227	pCi/L	75	75 - 138	0.25	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	79.6		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-291762/1-A
Matrix: Water
Analysis Batch: 295283

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 291762

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.09592	U	0.260	0.261	1.00	0.476	pCi/L	02/09/17 15:51	03/01/17 11:11	1
Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	91.7		40 - 110	02/09/17 15:51	03/01/17 11:11	1				
Y Carrier	82.6		40 - 110	02/09/17 15:51	03/01/17 11:11	1				

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-291762/2-A
Matrix: Water
Analysis Batch: 295283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 291762

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.54		1.79	1.00	0.502	pCi/L	120	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	83.8		40 - 110						
Y Carrier	84.5		40 - 110						

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 295280

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 291762

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.00302	U	13.8	16.89		1.86	1.00	0.517	pCi/L	123	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	73.7		40 - 110								
Y Carrier	83.7		40 - 110								

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 295280

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 291762

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.00302	U	13.8	16.52		1.81	1.00	0.479	pCi/L	120	45 - 150	0.1	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	79.6		40 - 110										
Y Carrier	80.4		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-292776/1-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292776

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.07316	U	0.188	0.188	3.00	0.322	pCi/L	02/16/17 09:55	02/27/17 11:11	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	82.7		40 - 110								02/16/17 09:55	02/27/17 11:11	1
Y Carrier	95.0		40 - 110								02/16/17 09:55	02/27/17 11:11	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-292776/2-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.847		0.916	3.00	0.351	pCi/L	104	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	81.4		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-176655-Q-1-F MS
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.0146	U	8.50	8.744		0.942	3.00	0.350	pCi/L	103	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	65.6		40 - 110								
Y Carrier	92.7		40 - 110								

Lab Sample ID: 440-176655-Q-1-G MSD
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.0146	U	8.50	9.105		0.939	3.00	0.287	pCi/L	107	19 - 150	0.19	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	78.2		40 - 110										
Y Carrier	91.6		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-294253/1-A
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294253

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-99.55	U	178	179	500	335	pCi/L	02/23/17 10:45	02/24/17 16:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-294253/2-A
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2919		455	500	336	pCi/L	99	74 - 114

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-118	U	2950	3131		482	500	352	pCi/L	106	67 - 130

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-118	U	2950	2811		441	500	328	pCi/L	95	67 - 130	0.35	1

Lab Sample ID: 440-175840-H-1-A MS
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-40.5	U	2950	3144		481	500	348	pCi/L	107	67 - 130

Lab Sample ID: 440-175840-H-1-B MSD
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-40.5	U	2950	2950		458	500	336	pCi/L	100	67 - 130	0.21	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.4		30 - 110					02/21/17 13:19	02/24/17 17:20	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120	
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121	
Tracer		LCS %Yield	LCS Qualifier	Limits						
Uranium-232		85.9		30 - 110						

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146	
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143	
Tracer		MS %Yield	MS Qualifier	Limits								
Uranium-232		88.1		30 - 110								

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146	0.01	1	
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1	
Tracer		MSD %Yield	MSD Qualifier	Limits										
Uranium-232		87.1		30 - 110										

Lab Sample ID: 440-175840-G-1-G MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146	
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143	
Tracer		MS %Yield	MS Qualifier	Limits								
Uranium-232		96.2		30 - 110								

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1	
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1	
		<i>MSD MSD</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	82.1		30 - 110											

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146			
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143			
		<i>MS MS</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	66.9		30 - 110											

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1	
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1	
		<i>MSD MSD</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	85.0		30 - 110											

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Rad

Prep Batch: 291755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	PrecSep-21	
MB 160-291755/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-291755/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	PrecSep-21	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	PrecSep-21	

Prep Batch: 291762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	PrecSep_0	
MB 160-291762/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-291762/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	PrecSep_0	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	PrecSep_0	

Prep Batch: 291958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-291958/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-291958/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-175633-1 DU	Outfall002_20170204_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	PrecSep-7	
MB 160-292776/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-292776/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-176655-Q-1-F MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-176655-Q-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	ExtChrom	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 294253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-294253/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-294253/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	LSC_Dist_Susp	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	LSC_Dist_Susp	
440-175840-H-1-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-175840-H-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Rad (Continued)

Prep Batch: 295075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total/NA	Water	Evaporation	
MB 160-295075/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-295075/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-295075/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-175633-1 MS	Outfall002_20170204_Comp	Total/NA	Water	Evaporation	
440-175633-1 MSBT	Outfall002_20170204_Comp	Total/NA	Water	Evaporation	
440-175633-1 MSBTD	Outfall002_20170204_Comp	Total/NA	Water	Evaporation	
440-175633-1 MSD	Outfall002_20170204_Comp	Total/NA	Water	Evaporation	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.
F	MS/MSD Recovery and/or RPD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 002 Comp		ANALYSIS REQUIRED					
Test America Contact: Urvashti Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Total Dissolved Metals: Mercury (E245)					
Sampler: NDENSON		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Chronic Toxicity - Selenium (EPA-821-R-02-013)					
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories, Inc.		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		Gross Alpha (E900), Gross Beta (E900), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1)					
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Comments
	Outfall002_20170204_Comp_F	2/4/2017	WM	1L Poly	3	None	200	Yes	Filter and preserve w/in 24hrs of receipt at lab.
	Outfall002_20170204_Comp	2/4/2017	WM	borosilicate vial	3	None	320	Yes	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
			WM	500 mL Poly	3	NaOH	220	Yes	Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.
			WM	2.5 Gal Cube	3	None	225	Yes	Only test if first or second rain events of the year
			WM	1 L Glass Amber	3	None	230	Yes	
			WM	1 Gal Cube	6	None	235	No	

Relinquished By: [Signature] Date/Time: 2-4-17 Company: 8945
 Relinquished By: [Signature] Date/Time: 2/4/17 Company: 1280
 Relinquished By: [Signature] Date/Time: 2/4/17 Company: 1280
 1.3.14 1.2.15 1.4/17 3C6
 1.5.14 1.11.14 1.11.14



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175633-2

Login Number: 175633

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175633-2

Login Number: 175633

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/07/17 01:13 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0,19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-175633-1	Outfall002_20170204_Comp	70.2
440-175633-1 MS	Outfall002_20170204_Comp	73.7
440-175633-1 MSD	Outfall002_20170204_Comp	79.6
LCS 160-291755/2-A	Lab Control Sample	83.8
MB 160-291755/1-A	Method Blank	91.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-175633-1	Outfall002_20170204_Comp	70.2	84.9
440-175633-1 MS	Outfall002_20170204_Comp	73.7	83.7
440-175633-1 MSD	Outfall002_20170204_Comp	79.6	80.4
LCS 160-291762/2-A	Lab Control Sample	83.8	84.5
MB 160-291762/1-A	Method Blank	91.7	82.6

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-175633-1	Outfall002_20170204_Comp	64.0	85.2
440-176655-Q-1-F MS	Matrix Spike	65.6	92.7
440-176655-Q-1-G MSD	Matrix Spike Duplicate	78.2	91.6
LCS 160-292776/2-A	Lab Control Sample	81.4	92.7
MB 160-292776/1-A	Method Blank	82.7	95.0

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-1	Outfall002_20170204_Comp	87.4
440-175633-1 MS	Outfall002_20170204_Comp	88.1
440-175633-1 MSD	Outfall002_20170204_Comp	87.1

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175840-G-1-G MS	Matrix Spike	96.2
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175633-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175633-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170204_ Comp	440-175633-1	N/A	Water	2/4/17 8:30 AM	E200.8
Outfall002_20170204_ Comp_F	440-175633-3	N/A	Water	2/4/17 8:30 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175633-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Sample collection times were not documented on the COC for the samples listed in Table 1 of this report. The laboratory logged the samples in per the times listed on the sample container labels.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHODS 200.8— METALS

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 5, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for zinc, was met with the following exception. Sample Outfall002_20170204_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. The dissolved zinc result for this sample was qualified as estimated (UJ for the nondetect).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for zinc were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater, with the following exception. For the dissolved sample analytical run, interferent aluminum had recoveries of 74% and 76% for the ICSA and ICSAB, respectively. Interferent aluminum was present in the filtered site sample at only a trace level, and the zinc ICSA and ICSAB results were within acceptance criteria. Therefore, the sample was not assessed for matrix interference.

It should be noted that the ICSA and ICSAB raw data was incomplete for the dissolved sample analytical run. The ICSAB data is not included in the raw data. The missing raw data results are reported on the Interference Check Standard QC summary form (Form 4A) but could not be verified.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170204_Comp and Outfall002_20170204_Comp_F for method 200.8 zinc analysis. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401756334

Analysis Method *E200.8*

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	2.9	20	2.5	ug/L	J,DX	J	DNQ

Sample Name Outfall002_20170204_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6		20	2.5	ug/L	UQP	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175633-4

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/4/2017 8:35:56 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175633-1	Outfall002_20170204_Comp	Water	02/04/17 08:30	02/04/17 12:30
440-175633-3	Outfall002_20170204_Comp_F	Water	02/04/17 08:30	02/04/17 12:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Job ID: 440-175633-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175633-4

Comments

200.7 metals analyzed with 200.8 method with 200.7 RLs.

Receipt

The samples were received on 2/4/2017 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.4° C, 1.4° C, 1.5° C, 1.6° C, 1.7° C and 1.9° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	2.9	J,DX	20	2.5	ug/L		02/13/17 08:20	02/13/17 21:46	1

Client Sample ID: Outfall002_20170204_Comp_F

Lab Sample ID: 440-175633-3

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	2.5	ug/L		02/11/17 15:09	02/14/17 17:35	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Client Sample ID: Outfall002_20170204_Comp

Lab Sample ID: 440-175633-1

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	387948	02/13/17 08:20	EN	TAL IRV
Total Recoverable	Analysis	200.8		1			388144	02/13/17 21:46	IH1	TAL IRV

Client Sample ID: Outfall002_20170204_Comp_F

Lab Sample ID: 440-175633-3

Date Collected: 02/04/17 08:30

Matrix: Water

Date Received: 02/04/17 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387060	02/07/17 17:39	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	387853	02/11/17 15:09	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388278	02/14/17 17:35	IH1	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-387948/1-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/13/17 08:20	02/13/17 21:41	1

Lab Sample ID: LCS 440-387948/2-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	80.2		ug/L		100	85 - 115

Lab Sample ID: 440-175633-1 MS
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	2.94		80.0	80.9		ug/L		97	70 - 130

Lab Sample ID: 440-175633-1 MSD
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Outfall002_20170204_Comp
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	2.94		80.0	78.6		ug/L		95	70 - 130	3	20

Lab Sample ID: MB 440-387060/1-C
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 387853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/11/17 15:09	02/14/17 17:29	1

Lab Sample ID: LCS 440-387060/2-C
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 387853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	76.4		ug/L		95	85 - 115

Lab Sample ID: 440-175633-3 MS
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Outfall002_20170204_Comp_F
Prep Type: Dissolved
Prep Batch: 387853

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	2.05		80.0	73.8		ug/L		92	70 - 130

Lab Sample ID: 440-175633-3 MSD
Matrix: Water
Analysis Batch: 388278

Client Sample ID: Outfall002_20170204_Comp_F
Prep Type: Dissolved
Prep Batch: 387853

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	2.05		80.0	72.0		ug/L		90	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

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QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Metals

Filtration Batch: 387060

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	FILTRATION	
MB 440-387060/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-387060/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	FILTRATION	
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 387853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	200.2	387060
MB 440-387060/1-C	Method Blank	Dissolved	Water	200.2	387060
LCS 440-387060/2-C	Lab Control Sample	Dissolved	Water	200.2	387060
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	200.2	387060
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	200.2	387060

Prep Batch: 387948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total Recoverable	Water	200.2	
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175633-1 MS	Outfall002_20170204_Comp	Total Recoverable	Water	200.2	
440-175633-1 MSD	Outfall002_20170204_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 388144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-1	Outfall002_20170204_Comp	Total Recoverable	Water	200.8	387948
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.8	387948
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.8	387948
440-175633-1 MS	Outfall002_20170204_Comp	Total Recoverable	Water	200.8	387948
440-175633-1 MSD	Outfall002_20170204_Comp	Total Recoverable	Water	200.8	387948

Analysis Batch: 388278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175633-3	Outfall002_20170204_Comp_F	Dissolved	Water	200.8	387853
MB 440-387060/1-C	Method Blank	Dissolved	Water	200.8	387853
LCS 440-387060/2-C	Lab Control Sample	Dissolved	Water	200.8	387853
440-175633-3 MS	Outfall002_20170204_Comp_F	Dissolved	Water	200.8	387853
440-175633-3 MSD	Outfall002_20170204_Comp_F	Dissolved	Water	200.8	387853

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-175633-4

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Derran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018; Outfall 002 Comp		Project Manager: Katharine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245), ethylhexylphthalate, NDMA, PCP 2,4,6 TCF, 2,4 Dinitrotoluene, Bis-2 alpha-BHC (E608) Ammonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E190.1) Perchlorate (E300) Cl ⁻ , SO ₄ ²⁻ , Nitrate-N, Nitrite-N, NO ₃ ⁻ & NO ₂ ⁻ , Surfactants (MBAS) (SM5540C/E425.1) (E405.1 (SM5210B, BODCalc)) BOD ₅ (20 degrees C) TCDD (and all congeners) (E1613B)		Comments 48 hours holding time for turbidity 48 hour holding time for turbidity Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures	
Sample: TAYLORSON		Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se		Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se		Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se		Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se	
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	MS/MSD
Outfall 002	Outfall002_20170204_Comp	2/4/2017	WM	500 mL Poly	3	HNO ₃	90	Yes	
			WM	1 L Glass Amber	2	None	110	No	
			WM	1 L Poly	1	None	115	No	
			WM	500 mL Poly	6	None	120	Yes	
			WM	500 mL Poly	6	None	130	Yes	
			WM	500 mL Poly	1	None	150	No	
			WM	500 mL Poly	3	H ₂ SO ₄	160	Yes	
			WM	1 L Glass Amber	6	None	170	Yes	
			WM	1 L Glass Amber	6	None	180	Yes	
			WM	1 L Poly	1	None	185	No	
			WM	beakers	3	HNO ₃	315	Yes	
			WM	1 L Glass Amber	2	None	110	No	
			WM	500 mL Poly	2	None	120	No	
			WM	500 mL Poly	2	None	130	No	
			WM	1 L Glass Amber	2	None	170	No	
			WM	1 L Glass Amber	2	None	180	No	

Relinquished By	Date/Time	Company	Received By	Date/Time	Company
Taylorson	2-4-17	5945	[Signature]	2/4/17	5945
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
Taylorson	2/4/17	1230	[Signature]	2/4/17	1230
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
Taylorson	2/4/17	1230	[Signature]	2/4/17	1230

1.3/1.6 1.2/1.5 1.4/1.7
 1.6/1.9 1.1/1.4 1.1/1.4 506
 3/4/2017



CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 002 Comp		ANALYSIS REQUIRED					
Test America Contact: Urvashti Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Total Dissolved Metals: Mercury (E245)					
Sampler: DENSON		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Chronic Toxicity - Selenium (EPA-821-R-02-013)					
TestAmerica's services under this CoC shall be performed in accordance with the T&A within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		CS-137 (E901.0 or E901.1) Radium 228 (E904.0), Uranium (E908.0), K-40, Tritium (H-3) (E908.0), Sr-90 (E905.0), Total Gross Alpha (E900.0), Gross Beta (E900.0), Cyanide (SM4500-CN-E / E335.2)					
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Comments
	Outfall002_20170204_Comp_F	2/4/2017	WM	1L Poly	3	None	200	Yes	Filter and preserve w/in 24hrs of receipt at lab.
	Outfall002_20170204_Comp	2/4/2017	WM	borosilicate vial	3	None	320	Yes	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
			WM	500 mL Poly	3	NaOH	220	Yes	Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.
			WM	2.5 Gal Cube	3	None	225	Yes	Only test if first or second rain events of the year
			WM	1 L Glass Amber	3	None	230	Yes	
			WM	1 Gal Cube	6	None	235	No	

Relinquished By	Date/Time	Company	Received By	Date/Time	Company
Patel	2-4-17	8945	[Signature]	2/4/17 0945	8945
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
[Signature]	2/4/17	1280	[Signature]	2/4/17 1236	1236
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
1.3.14	1.2.15	1.4/17	ATC	2/4/17 T.C.	ATC
1.5.14	1.11.14	1.11.14			



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175633-4

Login Number: 175633

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is <= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176628-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-176628-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170211_ Grab	440-176628-1	N/A	Water	2/11/2017 7:45:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176628-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable, with the exception of one of nine vials received broken for the volatile analysis. Sufficient sample volume remained for the sample and MS/MSD analyses.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170211_Grab. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170211 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance was within the laboratory control limits of 90-110%.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

The reviewer noted that no sample raw data was presented in the SDG for specific conductance analysis. Sample results were not qualified.

IV.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401766281

Analysis Method E120.1

Sample Name Outfall002_20170211_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/11/2017 7:45:00 AM Validation Level: 8

Lab Sample Name: 440-176628-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	380	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall002_20170211_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/11/2017 7:45:00 AM Validation Level: 8

Lab Sample Name: 440-176628-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.5	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall002_20170211_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/11/2017 7:45:00 AM Validation Level: 8

Lab Sample Name: 440-176628-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	0.51	0.50	0.25	ug/L			

Analysis Method SM2540F

Sample Name Outfall002_20170211_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/11/2017 7:45:00 AM Validation Level: 8

Lab Sample Name: 440-176628-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176628-1

Client Project/Site: Routine Outfall 002 Grab

Revision: 2

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/4/2017 9:20:15 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through
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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/4/2017 9:20:15 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176628-1	Outfall002_20170211_Grab	Water	02/11/17 07:45	02/11/17 14:04
440-176628-3	TB-20170211	Water	02/11/17 07:45	02/11/17 14:04

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Job ID: 440-176628-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176628-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Revised to correct list for ms/msd and level IV.

Receipt

The samples were received on 2/11/2017 2:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

Receipt Exceptions

One or more containers for the following sample(s) was received broken or leaking: 8 instead of 9 voas received one broke in package

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) 120.1, SM 2510B: The conductivity results were reported at a dilution and may have increased error compared to an undiluted samples. 2510B

(440-176948-B-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390316 and analytical batch 440-390450. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Client Sample ID: Outfall002_20170211_Grab

Lab Sample ID: 440-176628-1

Date Collected: 02/11/17 07:45

Matrix: Water

Date Received: 02/11/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/16/17 09:41	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/16/17 09:41	1
Trichloroethene	0.51		0.50	0.25	ug/L			02/16/17 09:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					02/16/17 09:41	1
Dibromofluoromethane (Surr)	102		76 - 132					02/16/17 09:41	1
Toluene-d8 (Surr)	106		80 - 128					02/16/17 09:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.5	1.5	mg/L		02/24/17 07:02	02/24/17 15:15	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	380		1.0	1.0	umhos/cm			02/21/17 07:46	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/11/17 17:18	1

Client Sample ID: TB-20170211

Lab Sample ID: 440-176628-3

Date Collected: 02/11/17 07:45

Matrix: Water

Date Received: 02/11/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/16/17 12:11	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/16/17 12:11	1
Trichloroethene	ND		0.50	0.25	ug/L			02/16/17 12:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					02/16/17 12:11	1
Dibromofluoromethane (Surr)	106		76 - 132					02/16/17 12:11	1
Toluene-d8 (Surr)	104		80 - 128					02/16/17 12:11	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Client Sample ID: Outfall002_20170211_Grab

Lab Sample ID: 440-176628-1

Date Collected: 02/11/17 07:45

Matrix: Water

Date Received: 02/11/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	388594	02/16/17 09:41	RM	TAL IRV
Total/NA	Analysis	120.1		1			389479	02/21/17 07:46	XL	TAL IRV
Total/NA	Prep	1664A			915 mL	1000 mL	390316	02/24/17 07:02	L1A	TAL IRV
Total/NA	Analysis	1664A		1			390450	02/24/17 15:15	L2A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	387859	02/11/17 17:18	RB	TAL IRV

Client Sample ID: TB-20170211

Lab Sample ID: 440-176628-3

Date Collected: 02/11/17 07:45

Matrix: Water

Date Received: 02/11/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	388594	02/16/17 12:11	RM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-388594/4
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/16/17 08:35	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/16/17 08:35	1
Trichloroethene	ND		0.50	0.25	ug/L			02/16/17 08:35	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		02/16/17 08:35	1
Dibromofluoromethane (Surr)	106		76 - 132		02/16/17 08:35	1
Toluene-d8 (Surr)	106		80 - 128		02/16/17 08:35	1

Lab Sample ID: LCS 440-388594/5
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	23.2		ug/L		93	70 - 130
1,2-Dichloroethane	25.0	27.7		ug/L		111	57 - 138
Trichloroethene	25.0	24.7		ug/L		99	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	100		80 - 128

Lab Sample ID: 440-176628-1 MS
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Outfall002_20170211_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	21.3		ug/L		85	70 - 130
1,2-Dichloroethane	ND		25.0	26.0		ug/L		104	56 - 146
Trichloroethene	0.51		25.0	23.2		ug/L		91	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Lab Sample ID: 440-176628-1 MSD
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Outfall002_20170211_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,1-Dichloroethene	ND		25.0	19.8		ug/L		79	70 - 130	7	20
1,2-Dichloroethane	ND		25.0	25.9		ug/L		104	56 - 146	1	20
Trichloroethene	0.51		25.0	24.6		ug/L		96	70 - 130	6	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-176628-1 MSD
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Outfall002_20170211_Grab
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-389479/3
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			02/21/17 07:46	1

Lab Sample ID: LCS 440-389479/4
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	761		umhos/cm		99	90 - 110

Lab Sample ID: 440-177384-C-1 DU
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	22		22.9		umhos/cm		4	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390316/1-A
Matrix: Water
Analysis Batch: 390450

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390316

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/24/17 07:02	02/24/17 15:15	1

Lab Sample ID: LCS 440-390316/2-A
Matrix: Water
Analysis Batch: 390450

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390316

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	34.1		mg/L		85	78 - 114

Lab Sample ID: LCSD 440-390316/3-A
Matrix: Water
Analysis Batch: 390450

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390316

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	38.1		mg/L		95	78 - 114	11	11

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

GC/MS VOA

Analysis Batch: 388594

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176628-1	Outfall002_20170211_Grab	Total/NA	Water	624	
440-176628-3	TB-20170211	Total/NA	Water	624	
MB 440-388594/4	Method Blank	Total/NA	Water	624	
LCS 440-388594/5	Lab Control Sample	Total/NA	Water	624	
440-176628-1 MS	Outfall002_20170211_Grab	Total/NA	Water	624	
440-176628-1 MSD	Outfall002_20170211_Grab	Total/NA	Water	624	

General Chemistry

Analysis Batch: 387859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176628-1	Outfall002_20170211_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 389479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176628-1	Outfall002_20170211_Grab	Total/NA	Water	120.1	
MB 440-389479/3	Method Blank	Total/NA	Water	120.1	
LCS 440-389479/4	Lab Control Sample	Total/NA	Water	120.1	
440-177384-C-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 390316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176628-1	Outfall002_20170211_Grab	Total/NA	Water	1664A	
MB 440-390316/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390316/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390316/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176628-1	Outfall002_20170211_Grab	Total/NA	Water	1664A	390316
MB 440-390316/1-A	Method Blank	Total/NA	Water	1664A	390316
LCS 440-390316/2-A	Lab Control Sample	Total/NA	Water	1664A	390316
LCSD 440-390316/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390316

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-176628-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

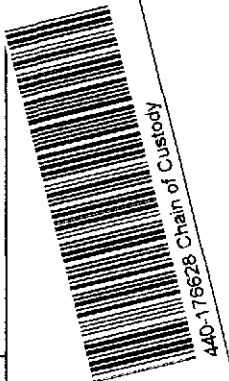
CHAIN OF CUSTODY FORM

EDBPJ60X

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSF/NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 002 Grab	
Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-280-3289 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)	
Sampler: Dem-Swath Roy Barajas/FERRY MAUER		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)	
Sample Description Outfall002_20170211_Grab	Sample ID: Outfall002_20170211_Grab	Sampling Date/Time 2/11/2017 10:40 AM	Sample Matrix WM
Outfall002_20170211_Grab_Extra		2/11/2017 10:40 AM	WM
Trip Blanks TB-20170211		2/11/2017 14:00	WQ

Relinquished By: [Signature]	Date/Time: 2/14/17 10:40 AM	Company: JNA ENV.	Received By: [Signature]	Date/Time: 2/11/17 10:40
Relinquished By: [Signature]	Date/Time: 2/14/17 10:40 AM	Company: JNA ENV.	Received By: [Signature]	Date/Time: 2/11/17 14:04
Relinquished By: [Signature]	Date/Time: 2/14/17 10:40 AM	Company: JNA ENV.	Received By: [Signature]	Date/Time: 2/11/17 14:04

Field Readings (Include units) Time of Readings: 0815 DO 6.54 mg/L pH 7.16 pH unit Temp 12.22 C/F Field readings QC Checked by: [Signature] Date/Time: 2-11-17/0820	Meter serial # _____
ANALYSIS REQUIRED Oil & Grease (E1684A-HEM) X VOCs - only 1,1-DCE, 1,2-DCA, TCE (E624) X Settable Solids (E160.5 (SM2540F)) X Conductivity (SM2510B / E120.1) X	Comments _____
Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X 48 Hour: _____ 5 Day: _____ Normal: _____	Sample integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months. Data Requirements: (Check) No Level I: _____ All Level IV: _____ X



1.0/1.9
 0.05/1.1
 0.05/0.5 KLS04

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- 12
- 13

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176628-1

Login Number: 176628

List Source: TestAmerica Irvine

List Number: 1

Creator: Garcia, Veronica G

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Refer to Job Narrative for details.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176655-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-176655-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170212_Comp	440-176655-1	N/A	Water	2/12/17 8:30 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall002_20170212_Comp_F	440-176655-3	N/A	Water	2/12/17 8:30 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176655-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- The corrections on the original COC were not initialed and dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, HxCDD, and PeCDF in the method blank were the same peaks comprising the totals in sample Outfall018_20170212_Comp. The results for totals HpCDD, HxCDD, and PeCDF were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total results for HpCDF, HxCDF, and TCDF in the sample included more peaks than the method



blank totals. The sample results for totals HpCDF, HxCDF, and TCDF were therefore qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Totals HpCDF and HxCDF containing EMPC peaks were qualified as estimated (J).

IV. EPA METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 1, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall002_20170212_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 30.5 hours after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%. The reviewer noted a dissolved LCS was not analyzed for mercury.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170212_Comp and Outfall002_20170212_Comp_F for both methods. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.



IV.4. SERIAL DILUTION

Serial dilution analyses were not performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 5, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The target compound was not detected in method blank.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries of alpha BHC and the RPD were within the laboratory control limits of 37-134% and $\leq 35\%$, respectively.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the sample of this SDG. Recoveries of alpha BHC and the RPD were within the laboratory control limits of 40-120% and $\leq 30\%$, respectively.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.



VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110% and 85-115%, respectfully. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170212_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. The reported nondetect is valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met for applicable target compounds. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits. The reviewer noted target compound 2,4-dinitrotoluene was not spiked in the LCS/LCSD.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG, Outfall002_20170212_Comp. Bis(2-ethylhexyl)phthalate was recovered above the control limits of 10-150% at 331% in the MS only. Due to the single recovery outlier, the RPD exceeded the control limit of $\leq 25\%$ at 112%. As bis(2-ethylhexyl)phthalate was not detected in the parent sample, qualifications were not assigned. Remaining recoveries and RPDs were within laboratory control limits.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 915 milliliters was less than the nominal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1 and 300.0, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, and 5540, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VIII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were provided by the laboratory.



VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs for BOD and total cyanide were $\leq 20\%$ and $\leq 10\%$, respectively.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20170212_Comp for ammonia, anions, MBAS, and total cyanide. Results were not assessed when the parent sample concentration exceeded the spike amount by 4 \times . Applicable recoveries and RPDs were within the laboratory control limits.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

Sulfate in sample Outfall002_20170212_Comp was reported from a 5 \times dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401766551

Analysis Method E1613B

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000011	0.000098	0.00000015	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000080	0.000098	0.00000018	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000044	0.000049	0.000000094	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000016	0.000049	0.00000017	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000032	0.000049	0.00000012	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000027	0.000049	0.00000011	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000049	0.00000013	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000027	0.000049	0.00000011	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000030	0.000049	0.00000013	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000031	0.000049	0.000000099	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000023	0.000049	0.00000011	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000028	0.000049	0.00000014	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000049	0.00000015	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000019	0.000049	0.000000093	ug/L	J,DXMBq	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000049	0.00000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000098	0.00000098	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	51207-31-9	0.00000053	0.000098	0.00000010	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000098	0.00000018	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000010	0.000049	0.00000011	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000028	0.000049	0.00000017	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000012	0.000049	0.00000010	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000053	0.000049	0.00000012	ug/L	J,DXMBq	U	B

Analysis Method *E1613B*

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000028	0.000049	0.00000014	ug/L	J,DXMB	U	B
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000049	0.00000015	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000079	0.0000098	0.00000010	ug/L	J,DXMB	J	B, DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000098	0.00000018	ug/L	U	U	

Analysis Method *E180.1*

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	0.65	0.10	0.040	NTU			

Analysis Method *E200.8*

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	1.7	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall002_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	1.7	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E245.1**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall002_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	9.5	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.82	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.82	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	110	2.5	1.3	mg/L			

Analysis Method E314.0**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0052	0.0026	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	6.56	0.546	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.46	2.19	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.46	2.19	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	5.46	1.09	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	5.46	1.09	ug/L	U	U	

Analysis Method SM2540C**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	280	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	ND	1.1	0.53	mg/L	U	U	

Analysis Method SM4500-CN-E**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G**Sample Name** Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 8:30:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.4	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.065	0.10	0.050	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176655-1

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 4:05:21 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 4:05:21 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176655-1	Outfall002_20170212_Comp	Water	02/12/17 08:30	02/13/17 06:30
440-176655-3	Outfall002_20170212_Comp_F	Water	02/12/17 08:30	02/13/17 06:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Job ID: 440-176655-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-176655-1**

Comments

No additional comments.

Receipt

The samples were received on 2/13/2017 6:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6° C, 0.9° C, 1.0° C and 1.4° C.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-387990 and analytical batch 440-388775. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The surrogates in the Method Blank (MB) for preparation batch 440-387990 failed below lower acceptance limits. All samples in this batch are nondetect (ND) for all target analytes and have acceptable surrogate recoveries. The purpose of the MB is to provide evidence that the batch is free from lab contamination. Low failing surrogates in the MB suggests possible low bias of lab contaminants. Since all samples in the associated batch are ND for all target analytes, they are thus unaffected by the possibility of lab contamination. The following samples are reported with the affected MB: 440-176061-1, 440-176061-3, 440-176655-1, 440-176654-1, 440-176710-1.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-387990 and analytical batch 440-388775 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The recovery of bis(2-ethylhexyl)phthalate in the matrix spike Outfall002_20170212_Comp (440-176655-1[MSD]) is over the upper ICAL range and reported as estimated.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-387990 and analytical batch 440-388775 was outside control limits for a few compounds. Sample matrix interference is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-387978 could not be evaluated for accuracy and precision; however, estimated results are reported per client request. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Job ID: 440-176655-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.56	0.546	ug/L		02/14/17 07:16	02/16/17 21:26	1
Bis(2-ethylhexyl) phthalate	ND		5.46	2.19	ug/L		02/14/17 07:16	02/16/17 21:26	1
N-Nitrosodimethylamine	ND		5.46	1.09	ug/L		02/14/17 07:16	02/16/17 21:26	1
Pentachlorophenol	ND		5.46	1.09	ug/L		02/14/17 07:16	02/16/17 21:26	1
2,4-Dinitrotoluene	ND		5.46	2.19	ug/L		02/14/17 07:16	02/16/17 21:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	81		40 - 120	02/14/17 07:16	02/16/17 21:26	1
2-Fluorobiphenyl	83		50 - 120	02/14/17 07:16	02/16/17 21:26	1
2-Fluorophenol	67		30 - 120	02/14/17 07:16	02/16/17 21:26	1
Nitrobenzene-d5	72		45 - 120	02/14/17 07:16	02/16/17 21:26	1
Phenol-d6	69		35 - 120	02/14/17 07:16	02/16/17 21:26	1
Terphenyl-d14	85		37 - 144	02/14/17 07:16	02/16/17 21:26	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0052	0.0026	ug/L		02/15/17 06:22	02/15/17 20:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	81		10 - 150	02/15/17 06:22	02/15/17 20:59	1
DCB Decachlorobiphenyl (Surr)	87		18 - 134	02/15/17 06:22	02/15/17 20:59	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.5		0.50	0.25	mg/L			02/13/17 13:10	1
Nitrate as N	0.82		0.11	0.055	mg/L			02/13/17 13:10	1
Nitrite as N	ND		0.15	0.070	mg/L			02/13/17 13:10	1
Sulfate	110		2.5	1.3	mg/L			02/13/17 13:53	5

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/13/17 11:37	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.82		0.15	0.070	mg/L			02/24/17 15:52	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000098	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,7,8-PeCDD	ND		0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,7,8-PeCDF	0.0000028	J,DX MB	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
2,3,4,7,8-PeCDF	ND		0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,4,7,8-HxCDD	ND		0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,6,7,8-HxCDD	0.0000030	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,7,8,9-HxCDD	0.0000023	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000027	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,6,7,8-HxCDF	0.0000027	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,7,8,9-HxCDF	0.0000031	J,DX MB	0.000049	0.0000000	ug/L		02/15/17 08:22	02/16/17 21:21	1
2,3,4,6,7,8-HxCDF	0.0000019	J,DX MB q	0.000049	0.0000000	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,4,6,7,8-HpCDD	0.0000016	J,DX MB	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,4,6,7,8-HpCDF	0.0000044	J,DX MB q	0.000049	0.0000000	ug/L		02/15/17 08:22	02/16/17 21:21	1
1,2,3,4,7,8,9-HpCDF	0.0000032	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
OCDD	0.0000080	J,DX MB	0.000098	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
OCDF	0.0000011	J,DX MB	0.000098	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total TCDD	ND		0.000098	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total TCDF	0.0000079	J,DX MB	0.000098	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total PeCDD	ND		0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total PeCDF	0.0000028	J,DX MB	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total HxCDD	0.0000053	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total HxCDF	0.0000012	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total HpCDD	0.0000028	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Total HpCDF	0.0000010	J,DX MB q	0.000049	0.0000001	ug/L		02/15/17 08:22	02/16/17 21:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	83		25 - 164				02/15/17 08:22	02/16/17 21:21	1
13C-2,3,7,8-TCDF	77		24 - 169				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,7,8-PeCDD	92		25 - 181				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,7,8-PeCDF	81		24 - 185				02/15/17 08:22	02/16/17 21:21	1
13C-2,3,4,7,8-PeCDF	92		21 - 178				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,4,7,8-HxCDD	91		32 - 141				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,6,7,8-HxCDD	101		28 - 130				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,4,7,8-HxCDF	94		26 - 152				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,6,7,8-HxCDF	96		26 - 123				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,7,8,9-HxCDF	83		29 - 147				02/15/17 08:22	02/16/17 21:21	1
13C-2,3,4,6,7,8-HxCDF	96		28 - 136				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,4,6,7,8-HpCDD	93		23 - 140				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,4,6,7,8-HpCDF	95		28 - 143				02/15/17 08:22	02/16/17 21:21	1
13C-1,2,3,4,7,8,9-HpCDF	95		26 - 138				02/15/17 08:22	02/16/17 21:21	1
13C-OCDD	95		17 - 157				02/15/17 08:22	02/16/17 21:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	99		35 - 197				02/15/17 08:22	02/16/17 21:21	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000098	0.00000098	ug/L		02/15/17 08:22	02/17/17 20:15	1
Isotope Dilution									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	75		24 - 169				02/15/17 08:22	02/17/17 20:15	1
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197				02/15/17 08:22	02/17/17 20:15	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/20/17 10:20	02/22/17 16:42	1
Copper	1.7	J,DX	2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:42	1
Lead	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:42	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:42	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 16:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	0.65		0.10	0.040	NTU			02/13/17 21:41	1
Total Dissolved Solids	280		10	5.0	mg/L			02/16/17 08:15	1
Total Suspended Solids	ND		1.1	0.53	mg/L			02/17/17 13:10	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:50	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/17/17 19:54	1
Methylene Blue Active Substances	0.065	J,DX	0.10	0.050	mg/L			02/13/17 21:06	1
Biochemical Oxygen Demand	1.4	J,DX	2.0	0.50	mg/L			02/13/17 15:17	1

Client Sample ID: Outfall002_20170212_Comp_F

Lab Sample ID: 440-176655-3

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/20/17 12:28	02/20/17 18:00	1
Copper	1.7	J,DX QP	2.0	0.50	ug/L		02/20/17 12:28	02/20/17 18:00	1
Lead	ND	QP	1.0	0.50	ug/L		02/20/17 12:28	02/20/17 18:00	1
Selenium	ND	QP	2.0	0.50	ug/L		02/20/17 12:28	02/20/17 18:00	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/21/17 22:29	02/22/17 15:17	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			915 mL	2.0 mL	387990	02/14/17 07:16	BMN	TAL IRV
Total/NA	Analysis	625		1			388775	02/16/17 21:26	DF	TAL IRV
Total/NA	Prep	608			955 mL	2 mL	387943	02/15/17 06:22	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			388491	02/15/17 20:59	JM	TAL IRV
Total/NA	Analysis	300.0		1			387977	02/13/17 13:10	NTN	TAL IRV
Total/NA	Analysis	300.0		1			387978	02/13/17 13:10	NTN	TAL IRV
Total/NA	Analysis	300.0		5			387978	02/13/17 13:53	NTN	TAL IRV
Total/NA	Analysis	314.0		1			387955	02/13/17 11:37	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			390473	02/24/17 15:52	NN	TAL IRV
Total/NA	Prep	1613B			1023.5 mL	20 uL	150582	02/15/17 08:22	DXD	TAL SAC
Total/NA	Analysis	1613B		1			151020	02/16/17 21:21	ALM	TAL SAC
Total/NA	Prep	1613B	RA		1023.5 mL	20 uL	150582	02/15/17 08:22	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			151375	02/17/17 20:15	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	389269	02/20/17 10:20	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			389969	02/22/17 16:42	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388098	02/13/17 22:08	DB	TAL IRV
Total/NA	Analysis	245.1		1			388283	02/14/17 16:42	DB	TAL IRV
Total/NA	Analysis	180.1		1			388093	02/13/17 21:41	ZEM	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	388595	02/16/17 08:15	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	950 mL	1000 mL	388951	02/17/17 13:10	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387906	02/13/17 14:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388090	02/13/17 20:50	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	389022	02/17/17 19:54	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	388092	02/13/17 21:06	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			388051	02/13/17 15:17	MMP	TAL IRV

Client Sample ID: Outfall002_20170212_Comp_F

Lab Sample ID: 440-176655-3

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			250 mL	250 mL	388059	02/13/17 16:03	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	389315	02/20/17 12:28	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			389474	02/20/17 18:00	EN	TAL IRV
Dissolved	Filtration	FILTRATION			250 mL	250 mL	388059	02/13/17 16:03	EN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	389720	02/21/17 22:29	DB	TAL IRV
Dissolved	Analysis	245.1		1			389956	02/22/17 15:17	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387990/1-A

Matrix: Water

Analysis Batch: 388775

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 387990

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/13/17 10:50	02/16/17 21:02	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/13/17 10:50	02/16/17 21:02	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/13/17 10:50	02/16/17 21:02	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/13/17 10:50	02/16/17 21:02	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/13/17 10:50	02/16/17 21:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	15	LG	40 - 120	02/13/17 10:50	02/16/17 21:02	1
2-Fluorobiphenyl	17	LG	50 - 120	02/13/17 10:50	02/16/17 21:02	1
2-Fluorophenol	12	LG	30 - 120	02/13/17 10:50	02/16/17 21:02	1
Nitrobenzene-d5	15	LG	45 - 120	02/13/17 10:50	02/16/17 21:02	1
Phenol-d6	12	LG	35 - 120	02/13/17 10:50	02/16/17 21:02	1
Terphenyl-d14	23	LG	37 - 144	02/13/17 10:50	02/16/17 21:02	1

Lab Sample ID: LCS 440-387990/2-A

Matrix: Water

Analysis Batch: 388775

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 387990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	7.241		ug/L		72	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	8.818		ug/L		88	10 - 150
N-Nitrosodimethylamine	10.0	6.028		ug/L		60	26 - 117
Pentachlorophenol	20.0	12.38		ug/L		62	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	76		40 - 120
2-Fluorobiphenyl	75		50 - 120
2-Fluorophenol	52		30 - 120
Nitrobenzene-d5	71		45 - 120
Phenol-d6	65		35 - 120
Terphenyl-d14	83		37 - 144

Lab Sample ID: LCSD 440-387990/3-A

Matrix: Water

Analysis Batch: 388775

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 387990

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	10.0	7.780		ug/L		78	37 - 144	7	35
Bis(2-ethylhexyl) phthalate	10.0	8.792		ug/L		88	10 - 150	0	35
N-Nitrosodimethylamine	10.0	7.449		ug/L		74	26 - 117	21	35
Pentachlorophenol	20.0	13.10		ug/L		65	14 - 150	6	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	80		40 - 120
2-Fluorobiphenyl	77		50 - 120
2-Fluorophenol	66		30 - 120
Nitrobenzene-d5	70		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-387990/3-A
Matrix: Water
Analysis Batch: 388775

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387990

	LCSD %Recovery	LCSD Qualifier	Limits
<i>Phenol-d6</i>	68		35 - 120
<i>Terphenyl-d14</i>	84		37 - 144

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 388775

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 387990

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.5	8.723		ug/L		83	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.5	34.79	EY LM	ug/L		331	10 - 150
N-Nitrosodimethylamine	ND		10.5	7.978		ug/L		76	12 - 123
Pentachlorophenol	ND		21.1	18.64		ug/L		89	14 - 150

	MS %Recovery	MS Qualifier	Limits
<i>2,4,6-Tribromophenol</i>	87		40 - 120
<i>2-Fluorobiphenyl</i>	80		50 - 120
<i>2-Fluorophenol</i>	68		30 - 120
<i>Nitrobenzene-d5</i>	74		45 - 120
<i>Phenol-d6</i>	73		35 - 120
<i>Terphenyl-d14</i>	83		37 - 144

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 388775

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 387990

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	ND		10.2	8.179		ug/L		80	37 - 144	6	30
Bis(2-ethylhexyl) phthalate	ND		10.2	9.829	BA	ug/L		96	10 - 150	112	25
N-Nitrosodimethylamine	ND		10.2	6.774		ug/L		66	12 - 123	16	35
Pentachlorophenol	ND		20.4	17.10		ug/L		84	14 - 150	9	25

	MSD %Recovery	MSD Qualifier	Limits
<i>2,4,6-Tribromophenol</i>	83		40 - 120
<i>2-Fluorobiphenyl</i>	79		50 - 120
<i>2-Fluorophenol</i>	60		30 - 120
<i>Nitrobenzene-d5</i>	71		45 - 120
<i>Phenol-d6</i>	67		35 - 120
<i>Terphenyl-d14</i>	86		37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-387943/1-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387943

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/14/17 07:49	02/15/17 14:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: MB 440-387943/1-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387943

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	86		10 - 150	02/14/17 07:49	02/15/17 14:06	1
DCB Decachlorobiphenyl (Surr)	99		18 - 134	02/14/17 07:49	02/15/17 14:06	1

Lab Sample ID: LCS 440-387943/2-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Spike Added	LCS LCS	Limits	Unit	D	%Rec	%Rec. Limits												
								Qualifier											
alpha-BHC	0.200		37 - 134	ug/L		92													
<table border="1"> <thead> <tr> <th>Surrogate</th> <th>%Recovery</th> <th>Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Tetrachloro-m-xylene</td> <td>87</td> <td></td> <td>10 - 150</td> </tr> <tr> <td>DCB Decachlorobiphenyl (Surr)</td> <td>98</td> <td></td> <td>18 - 134</td> </tr> </tbody> </table>								Surrogate	%Recovery	Qualifier	Limits	Tetrachloro-m-xylene	87		10 - 150	DCB Decachlorobiphenyl (Surr)	98		18 - 134
Surrogate	%Recovery	Qualifier	Limits																
Tetrachloro-m-xylene	87		10 - 150																
DCB Decachlorobiphenyl (Surr)	98		18 - 134																

Lab Sample ID: LCSD 440-387943/3-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Spike Added	LCSD LCSD	Limits	Unit	D	%Rec	%Rec. Limits	RPD	Limit												
										Qualifier											
alpha-BHC	0.200		37 - 134	ug/L		96		4	35												
<table border="1"> <thead> <tr> <th>Surrogate</th> <th>%Recovery</th> <th>Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Tetrachloro-m-xylene</td> <td>88</td> <td></td> <td>10 - 150</td> </tr> <tr> <td>DCB Decachlorobiphenyl (Surr)</td> <td>100</td> <td></td> <td>18 - 134</td> </tr> </tbody> </table>										Surrogate	%Recovery	Qualifier	Limits	Tetrachloro-m-xylene	88		10 - 150	DCB Decachlorobiphenyl (Surr)	100		18 - 134
Surrogate	%Recovery	Qualifier	Limits																		
Tetrachloro-m-xylene	88		10 - 150																		
DCB Decachlorobiphenyl (Surr)	100		18 - 134																		

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 388491

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS	Unit	D	%Rec	%Rec. Limits												
									Qualifier											
alpha-BHC	ND		0.203		ug/L		84	40 - 120												
<table border="1"> <thead> <tr> <th>Surrogate</th> <th>%Recovery</th> <th>Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Tetrachloro-m-xylene</td> <td>81</td> <td></td> <td>10 - 150</td> </tr> <tr> <td>DCB Decachlorobiphenyl (Surr)</td> <td>102</td> <td></td> <td>18 - 134</td> </tr> </tbody> </table>									Surrogate	%Recovery	Qualifier	Limits	Tetrachloro-m-xylene	81		10 - 150	DCB Decachlorobiphenyl (Surr)	102		18 - 134
Surrogate	%Recovery	Qualifier	Limits																	
Tetrachloro-m-xylene	81		10 - 150																	
DCB Decachlorobiphenyl (Surr)	102		18 - 134																	

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 388491

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD	Unit	D	%Rec	%Rec. Limits	RPD	Limit												
											Qualifier											
alpha-BHC	ND		0.216		ug/L		83	40 - 120	5	30												
<table border="1"> <thead> <tr> <th>Surrogate</th> <th>%Recovery</th> <th>Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Tetrachloro-m-xylene</td> <td>79</td> <td></td> <td>10 - 150</td> </tr> <tr> <td>DCB Decachlorobiphenyl (Surr)</td> <td>89</td> <td></td> <td>18 - 134</td> </tr> </tbody> </table>											Surrogate	%Recovery	Qualifier	Limits	Tetrachloro-m-xylene	79		10 - 150	DCB Decachlorobiphenyl (Surr)	89		18 - 134
Surrogate	%Recovery	Qualifier	Limits																			
Tetrachloro-m-xylene	79		10 - 150																			
DCB Decachlorobiphenyl (Surr)	89		18 - 134																			

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-387977/5
Matrix: Water
Analysis Batch: 387977

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/13/17 11:39	1
Nitrite as N	ND		0.15	0.070	mg/L			02/13/17 11:39	1

Lab Sample ID: LCS 440-387977/4
Matrix: Water
Analysis Batch: 387977

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.11		mg/L		99	90 - 110
Nitrite as N	1.52	1.52		mg/L		100	90 - 110

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 387977

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.82		1.13	1.96		mg/L		101	80 - 120
Nitrite as N	ND		1.52	1.57		mg/L		103	80 - 120

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 387977

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.82		1.13	1.97		mg/L		101	80 - 120	0	20
Nitrite as N	ND		1.52	1.57		mg/L		103	80 - 120	0	20

Lab Sample ID: MB 440-387978/5
Matrix: Water
Analysis Batch: 387978

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		0.50	0.25	mg/L			02/13/17 11:39	1

Lab Sample ID: LCS 440-387978/4
Matrix: Water
Analysis Batch: 387978

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	4.99		mg/L		100	90 - 110

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 387978

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9.5		5.00	14.9		mg/L		109	80 - 120
Sulfate	120	EY	5.00	128	EY BB	mg/L		121	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 387978

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9.5		5.00	15.0		mg/L		110	80 - 120	0	20
Sulfate	120	EY	5.00	128	EY BB	mg/L		123	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-387955/5
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/13/17 10:04	1

Lab Sample ID: LCS 440-387955/4
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	21.5		ug/L		86	85 - 115

Lab Sample ID: MRL 440-387955/7
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.70	J,DX	ug/L		93	75 - 125

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.0		ug/L		108	80 - 120

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.4		ug/L		110	80 - 120	2	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.000000635	J,DX q	0.000010	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138	02/15/17 08:22	02/16/17 18:17	1
13C-OCDD	63		17 - 157	02/15/17 08:22	02/16/17 18:17	1
<i>Surrogate</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
37Cl4-2,3,7,8-TCDD	90		35 - 197	02/15/17 08:22	02/16/17 18:17	1

Lab Sample ID: LCS 320-150582/2-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150582

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>
2,3,7,8-TCDF	0.000200	0.000232	MB	ug/L		116	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00109	MB	ug/L		109	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00118	MB	ug/L		118	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00109	MB	ug/L		109	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00109	MB	ug/L		109	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00112	MB	ug/L		112	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00103	MB	ug/L		103	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00108	MB	ug/L		108	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00112	MB	ug/L		112	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00114	MB	ug/L		114	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00116	MB	ug/L		116	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00108	MB	ug/L		108	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00112	MB	ug/L		112	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104	MB	ug/L		104	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00213	MB	ug/L		106	63 - 170
<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>				
	<i>%Recovery</i>	<i>Qualifier</i>					
13C-2,3,7,8-TCDD	62		20 - 175				
13C-2,3,7,8-TCDF	59		22 - 152				
13C-1,2,3,7,8-PeCDD	68		21 - 227				
13C-1,2,3,7,8-PeCDF	59		21 - 192				
13C-2,3,4,7,8-PeCDF	68		13 - 328				
13C-1,2,3,4,7,8-HxCDD	65		21 - 193				
13C-1,2,3,6,7,8-HxCDD	71		25 - 163				
13C-1,2,3,4,7,8-HxCDF	64		19 - 202				
13C-1,2,3,6,7,8-HxCDF	66		21 - 159				
13C-1,2,3,7,8,9-HxCDF	60		17 - 205				
13C-2,3,4,6,7,8-HxCDF	65		22 - 176				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-150582/2-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150582

<i>Isotope Dilution</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	64		13 - 199

<i>Surrogate</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-150582/3-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150582

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>		<i>RPD</i>	<i>Limit</i>
							<i>Limits</i>	<i>RPD</i>		
2,3,7,8-TCDD	0.000200	0.000216	MB	ug/L		108	67 - 158	1	50	
2,3,7,8-TCDF	0.000200	0.000228	MB	ug/L		114	75 - 158	2	50	
1,2,3,7,8-PeCDD	0.00100	0.00104	MB	ug/L		104	70 - 142	5	50	
1,2,3,7,8-PeCDF	0.00100	0.00107	MB	ug/L		107	80 - 134	10	50	
2,3,4,7,8-PeCDF	0.00100	0.00104	MB	ug/L		104	68 - 160	5	50	
1,2,3,4,7,8-HxCDD	0.00100	0.000922	MB	ug/L		92	70 - 164	17	50	
1,2,3,6,7,8-HxCDD	0.00100	0.000969	MB	ug/L		97	76 - 134	15	50	
1,2,3,7,8,9-HxCDD	0.00100	0.000827	MB	ug/L		83	64 - 162	22	50	
1,2,3,4,7,8-HxCDF	0.00100	0.000951	MB	ug/L		95	72 - 134	13	50	
1,2,3,6,7,8-HxCDF	0.00100	0.000989	MB	ug/L		99	84 - 130	12	50	
1,2,3,7,8,9-HxCDF	0.00100	0.00101	MB	ug/L		101	78 - 130	12	50	
2,3,4,6,7,8-HxCDF	0.00100	0.000992	MB	ug/L		99	70 - 156	15	50	
1,2,3,4,6,7,8-HpCDD	0.00100	0.000903	MB	ug/L		90	70 - 140	18	50	
1,2,3,4,6,7,8-HpCDF	0.00100	0.000934	MB	ug/L		93	82 - 122	18	50	
1,2,3,4,7,8,9-HpCDF	0.00100	0.000875	MB	ug/L		88	78 - 138	17	50	
OCDD	0.00200	0.00175	MB	ug/L		88	78 - 144	13	50	
OCDF	0.00200	0.00189	MB	ug/L		94	63 - 170	12	50	

<i>Isotope Dilution</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	59		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,6,7,8-HxCDD	73		25 - 163
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	58		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	64		13 - 199

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-150582/3-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150582

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	88		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151375

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB	MB	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDF - RA	ND		0.000010	0.0000015	ug/L		02/15/17 08:22	02/17/17 18:59	1
Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
13C-2,3,7,8-TCDF - RA	57		24 - 169	02/15/17 08:22	02/17/17 18:59	1			
Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac			
	%Recovery	Qualifier							
37Cl4-2,3,7,8-TCDD - RA	86		35 - 197	02/15/17 08:22	02/17/17 18:59	1			

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		02/20/17 10:20	02/22/17 16:37	1
Copper	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Lead	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1

Lab Sample ID: LCS 440-389269/2-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits	%Rec.	
	Added	Result	Qualifier						
Cadmium	80.0	79.5		ug/L		99	85 - 115		
Copper	80.0	81.6		ug/L		102	85 - 115		
Lead	80.0	79.0		ug/L		99	85 - 115		
Selenium	80.0	81.9		ug/L		102	85 - 115		

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits	%Rec.	
	Result	Qualifier	Added	Result	Qualifier						
Cadmium	ND		80.0	79.8		ug/L		100	70 - 130		
Copper	1.7	J,DX	80.0	80.3		ug/L		98	70 - 130		
Lead	ND		80.0	78.1		ug/L		98	70 - 130		
Selenium	ND		80.0	80.7		ug/L		101	70 - 130		

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Cadmium	ND		80.0	78.7		ug/L		98	70 - 130	1	20
Copper	1.7	J,DX	80.0	79.6		ug/L		97	70 - 130	1	20
Lead	ND		80.0	75.3		ug/L		94	70 - 130	4	20
Selenium	ND		80.0	79.0		ug/L		99	70 - 130	2	20

Lab Sample ID: MB 440-388059/1-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389315

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		02/20/17 12:28	02/20/17 17:54	1
Copper	ND		2.0	0.50	ug/L		02/20/17 12:28	02/20/17 17:54	1
Lead	ND		1.0	0.50	ug/L		02/20/17 12:28	02/20/17 17:54	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 12:28	02/20/17 17:54	1

Lab Sample ID: LCS 440-388059/2-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Cadmium	80.0	73.7		ug/L		92	85 - 115
Copper	80.0	73.9		ug/L		92	85 - 115
Lead	80.0	75.3		ug/L		94	85 - 115
Selenium	80.0	77.5		ug/L		97	85 - 115

Lab Sample ID: 440-176655-3 MS
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Outfall002_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Cadmium	ND	QP	80.0	75.2		ug/L		94	70 - 130	
Copper	1.7	J,DX QP	80.0	76.2		ug/L		93	70 - 130	
Lead	ND	QP	80.0	75.3		ug/L		94	70 - 130	
Selenium	ND	QP	80.0	78.3		ug/L		98	70 - 130	

Lab Sample ID: 440-176655-3 MSD
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Outfall002_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	76.7		ug/L		96	70 - 130	2	20
Copper	1.7	J,DX QP	80.0	77.8		ug/L		95	70 - 130	2	20
Lead	ND	QP	80.0	76.4		ug/L		95	70 - 130	1	20
Selenium	ND	QP	80.0	80.2		ug/L		100	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388098/1-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388098

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 16:36	1

Lab Sample ID: LCS 440-388098/2-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.73		ug/L		97	85 - 115

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.79		ug/L		97	70 - 130

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.73		ug/L		97	70 - 130	1	20

Lab Sample ID: MB 440-389720/1-A
Matrix: Water
Analysis Batch: 389956

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389720

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/21/17 22:29	02/22/17 15:12	1

Lab Sample ID: LCS 440-389720/2-A
Matrix: Water
Analysis Batch: 389956

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389720

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.40		ug/L		105	85 - 115

Lab Sample ID: 440-176655-3 MS
Matrix: Water
Analysis Batch: 389956

Client Sample ID: Outfall002_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389720

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.73		ug/L		109	70 - 130

Lab Sample ID: 440-176655-3 MSD
Matrix: Water
Analysis Batch: 389956

Client Sample ID: Outfall002_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389720

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.55		ug/L		107	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-388093/5
Matrix: Water
Analysis Batch: 388093

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/13/17 21:41	1

Lab Sample ID: 440-176654-F-1 DU
Matrix: Water
Analysis Batch: 388093

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	0.19		0.180		NTU		5	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-388595/1
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/16/17 08:15	1

Lab Sample ID: LCS 440-388595/2
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	964		mg/L		96	90 - 110

Lab Sample ID: 440-176891-A-44 DU
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	4700		4770		mg/L		0.6	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-388951/1
Matrix: Water
Analysis Batch: 388951

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/17/17 13:10	1

Lab Sample ID: LCS 440-388951/2
Matrix: Water
Analysis Batch: 388951

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	974		mg/L		97	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-176826-A-1 DU
Matrix: Water
Analysis Batch: 388951

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	670		650		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387906/1-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387906

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:50	1

Lab Sample ID: LCS 440-387906/2-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	96.9		ug/L		97	90 - 110

Lab Sample ID: LCSD 440-387906/3-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	96.8		ug/L		97	90 - 110	0	10

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	97.9		ug/L		98	70 - 115

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	99.7		ug/L		100	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-389022/10
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/17/17 18:12	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: LCS 440-389022/11
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	4.830		mg/L		97	90 - 110

Lab Sample ID: MRL 440-389022/9
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2000		mg/L		100	10 - 200

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.240		mg/L		105	90 - 110

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.020		mg/L		100	90 - 110	4	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-388092/3
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/13/17 21:06	1

Lab Sample ID: LCS 440-388092/4
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.237		mg/L		95	90 - 110

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.065	J,DX	0.250	0.323		mg/L		103	50 - 125

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 440-176655-1 MSD

Matrix: Water

Analysis Batch: 388092

Client Sample ID: Outfall002_20170212_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.065	J,DX	0.250	0.312		mg/L		99	50 - 125	4	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-388051/1

Matrix: Water

Analysis Batch: 388051

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/13/17 15:17	1

Lab Sample ID: LCS 440-388051/4

Matrix: Water

Analysis Batch: 388051

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	195		mg/L		98	85 - 115

Lab Sample ID: LCSD 440-388051/5

Matrix: Water

Analysis Batch: 388051

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	197		mg/L		99	85 - 115	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

GC/MS Semi VOA

Prep Batch: 387990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	625	
MB 440-387990/1-A	Method Blank	Total/NA	Water	625	
LCS 440-387990/2-A	Lab Control Sample	Total/NA	Water	625	
LCS D 440-387990/3-A	Lab Control Sample Dup	Total/NA	Water	625	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	625	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	625	

Analysis Batch: 388775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	625	387990
MB 440-387990/1-A	Method Blank	Total/NA	Water	625	387990
LCS 440-387990/2-A	Lab Control Sample	Total/NA	Water	625	387990
LCS D 440-387990/3-A	Lab Control Sample Dup	Total/NA	Water	625	387990
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	625	387990
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	625	387990

GC Semi VOA

Prep Batch: 387943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	608	
MB 440-387943/1-A	Method Blank	Total/NA	Water	608	
LCS 440-387943/2-A	Lab Control Sample	Total/NA	Water	608	
LCS D 440-387943/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	608	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	608	

Analysis Batch: 388423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-387943/1-A	Method Blank	Total/NA	Water	608 Pesticides	387943
LCS 440-387943/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	387943
LCS D 440-387943/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	387943

Analysis Batch: 388491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	608 Pesticides	387943
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	608 Pesticides	387943
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	608 Pesticides	387943

HPLC/IC

Analysis Batch: 387955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	314.0	
MB 440-387955/5	Method Blank	Total/NA	Water	314.0	
LCS 440-387955/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-387955/7	Lab Control Sample	Total/NA	Water	314.0	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	314.0	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	314.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

HPLC/IC (Continued)

Analysis Batch: 387977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	300.0	
MB 440-387977/5	Method Blank	Total/NA	Water	300.0	
LCS 440-387977/4	Lab Control Sample	Total/NA	Water	300.0	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	300.0	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	300.0	

Analysis Batch: 387978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	300.0	
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	300.0	
MB 440-387978/5	Method Blank	Total/NA	Water	300.0	
LCS 440-387978/4	Lab Control Sample	Total/NA	Water	300.0	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	300.0	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	300.0	

Analysis Batch: 390473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 150582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	1613B	
440-176655-1 - RA	Outfall002_20170212_Comp	Total/NA	Water	1613B	
MB 320-150582/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-150582/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-150582/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-150582/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 151020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	1613B	150582
MB 320-150582/1-A	Method Blank	Total/NA	Water	1613B	150582
LCS 320-150582/2-A	Lab Control Sample	Total/NA	Water	1613B	150582
LCSD 320-150582/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	150582

Analysis Batch: 151375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1 - RA	Outfall002_20170212_Comp	Total/NA	Water	1613B	150582
MB 320-150582/1-A - RA	Method Blank	Total/NA	Water	1613B	150582

Metals

Filtration Batch: 388059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388059/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Metals (Continued)

Filtration Batch: 388059 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 388098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	245.1	
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	245.1	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	245.1	

Analysis Batch: 388283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	245.1	388098
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	388098
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	388098
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	245.1	388098
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	245.1	388098

Prep Batch: 389269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total Recoverable	Water	200.2	
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-176655-1 MS	Outfall002_20170212_Comp	Total Recoverable	Water	200.2	
440-176655-1 MSD	Outfall002_20170212_Comp	Total Recoverable	Water	200.2	

Prep Batch: 389315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	200.2	388059
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.2	388059
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.2	388059
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	200.2	388059
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	200.2	388059

Analysis Batch: 389474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	200.8	389315
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.8	389315
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.8	389315
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	200.8	389315
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	200.8	389315

Prep Batch: 389720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	245.1	388059
MB 440-389720/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-389720/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	245.1	388059
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	245.1	388059

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Metals (Continued)

Analysis Batch: 389956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	245.1	389720
MB 440-389720/1-A	Method Blank	Total/NA	Water	245.1	389720
LCS 440-389720/2-A	Lab Control Sample	Total/NA	Water	245.1	389720
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	245.1	389720
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	245.1	389720

Analysis Batch: 389969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total Recoverable	Water	200.8	389269
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.8	389269
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389269
440-176655-1 MS	Outfall002_20170212_Comp	Total Recoverable	Water	200.8	389269
440-176655-1 MSD	Outfall002_20170212_Comp	Total Recoverable	Water	200.8	389269

General Chemistry

Prep Batch: 387906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	Distill/CN	
MB 440-387906/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	Distill/CN	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	Distill/CN	

Analysis Batch: 388051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	SM5210B	
USB 440-388051/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-388051/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-388051/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 388090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	SM 4500 CN E	387906
MB 440-387906/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387906
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387906
LCSD 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	387906
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	SM 4500 CN E	387906
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	SM 4500 CN E	387906

Analysis Batch: 388092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	SM 5540C	
MB 440-388092/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-388092/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	SM 5540C	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	SM 5540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

General Chemistry (Continued)

Analysis Batch: 388093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	180.1	
MB 440-388093/5	Method Blank	Total/NA	Water	180.1	
440-176654-F-1 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 388595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	SM 2540C	
MB 440-388595/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-388595/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-176891-A-44 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 388951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	SM 2540D	
MB 440-388951/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-388951/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-176826-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 389022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-389022/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-389022/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-389022/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	SM 4500 NH3 G	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
EY	Result exceeds normal dynamic range; reported as a min. est.
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
BA	Relative percent difference out of control
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
BB	Sample > 4X spike concentration
EY	Result exceeds normal dynamic range; reported as a min. est.
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
608 Pesticides	608	Water	alpha-BHC
625	625	Water	2,4,6-Trichlorophenol
625	625	Water	2,4-Dinitrotoluene
625	625	Water	Bis(2-ethylhexyl) phthalate
625	625	Water	N-Nitrosodimethylamine
625	625	Water	Pentachlorophenol
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvasi	Lab PM: Patel, Urvasi																																								
Client Contact: urvashi.patel@testamericainc.com		Phone: 440-176655	Chain of Custody: 440-176655																																								
Shipping/Receiving: TestAmerica Laboratories, Inc.		State of Origin: California																																									
Address: 13715 Rider Trail North, Earth City, MO, 63045		Job #: 440-176655-1																																									
City: Earth City		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:																																									
State: MO		M - Hexane N - None O - AcNO2 P - Na2OAS Q - Na2SO3 R - H2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)																																									
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Total Number of containers: 2																																									
Email: BOEING NPDES SSFL outfalls		Boeing SSFL; DO NOT FILTER; use prep date from preservation																																									
Project Name: SSOWR		Boeing SSFL; DO NOT FILTER; use prep date from preservation																																									
Project #: 44009879		Boeing SSFL; DO NOT FILTER; use prep date from preservation																																									
Site: SSOWR		Boeing SSFL; DO NOT FILTER; use prep date from preservation																																									
Sample Identification - Client ID (Lab ID)																																											
Outfall002_20170212_Comp (440-176655-1)	Sample Date: 2/12/17	Sample Time: 08:30 Pacific	Matrix: Water																																								
Outfall002_20170212_Comp (440-176655-1MS)	Sample Date: 2/12/17	Sample Time: 08:30 Pacific	Matrix: Water																																								
Outfall002_20170212_Comp (440-176655-1MSD)	Sample Date: 2/12/17	Sample Time: 08:30 Pacific	Matrix: Water																																								
<table border="1"> <thead> <tr> <th>Analysis Requested</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>900.0/Evaporation Gross Alpha/Beta</th> <th>901.1/Calc/Fill_Geo_0 K-40 and Cesium-137</th> <th>903.0/PreSep_21 Radium-226</th> <th>904.0/PreSep_0 Radium-228</th> <th>905.5/90PreSep_7 Strontium-90</th> <th>A01R_U/EXChrom_Actin Total Uranium</th> <th>906.0/LSC_Dist_Susp Tritium</th> </tr> </thead> <tbody> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>				Analysis Requested	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	900.0/Evaporation Gross Alpha/Beta	901.1/Calc/Fill_Geo_0 K-40 and Cesium-137	903.0/PreSep_21 Radium-226	904.0/PreSep_0 Radium-228	905.5/90PreSep_7 Strontium-90	A01R_U/EXChrom_Actin Total Uranium	906.0/LSC_Dist_Susp Tritium		X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Analysis Requested	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	900.0/Evaporation Gross Alpha/Beta	901.1/Calc/Fill_Geo_0 K-40 and Cesium-137	903.0/PreSep_21 Radium-226	904.0/PreSep_0 Radium-228	905.5/90PreSep_7 Strontium-90	A01R_U/EXChrom_Actin Total Uranium	906.0/LSC_Dist_Susp Tritium																																		
	X	X	X	X	X	X	X	X	X																																		
	X	X	X	X	X	X	X	X	X																																		
	X	X	X	X	X	X	X	X	X																																		
Special Instructions/Note: Boeing SSFL; DO NOT FILTER; use prep date from preservation Boeing SSFL; DO NOT FILTER; use prep date from preservation Boeing SSFL; DO NOT FILTER; use prep date from preservation																																											
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)																																											
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																																											
Chain of Custody Received by: <i>[Signature]</i> Date/Time: 2/14/17 0910 Company: <i>[Signature]</i> Received by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____ Cooler Temperature(s) °C and Other Remarks:																																											



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176655-1

Login Number: 176655

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176655-1

Login Number: 176655
List Number: 3
Creator: Edman, Connor M

List Source: TestAmerica Sacramento
List Creation: 02/14/17 12:28 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-176655-1	Outfall002_20170212_Comp		83		77		92		81
440-176655-1 - RA	Outfall002_20170212_Comp				75				
MB 320-150582/1-A	Method Blank		60		58		64		56
MB 320-150582/1-A - RA	Method Blank				57				

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-176655-1	Outfall002_20170212_Comp		92		91		101		94
440-176655-1 - RA	Outfall002_20170212_Comp								
MB 320-150582/1-A	Method Blank		65		63		68		63
MB 320-150582/1-A - RA	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-176655-1	Outfall002_20170212_Comp		96		83		96	93	
440-176655-1 - RA	Outfall002_20170212_Comp								
MB 320-150582/1-A	Method Blank		64		58		62	62	
MB 320-150582/1-A - RA	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-176655-1	Outfall002_20170212_Comp		95		95		95
440-176655-1 - RA	Outfall002_20170212_Comp						
MB 320-150582/1-A	Method Blank		64		62		63
MB 320-150582/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-150582/2-A	Lab Control Sample	62	59	68	59	68	65	71	64
LCSD 320-150582/3-A	Lab Control Sample Dup	59	59	65	59	66	66	73	63

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-150582/2-A	Lab Control Sample	66	60	65	63	64	64	64
LCSD 320-150582/3-A	Lab Control Sample Dup	65	58	66	63	64	64	64

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176655-2

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 9:59:41 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 9:59:41 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176655-1	Outfall002_20170212_Comp	Water	02/12/17 08:30	02/13/17 06:30

- 1
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Job ID: 440-176655-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176655-2

Comments

No additional comments.

Receipt

The samples were received on 2/13/2017 6:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6° C, 0.9° C, 1.0° C and 1.4° C.

RAD

Method(s) 901.1: Gamma Prep Batch: 160-292601

The sample duplicate had an MDC of 20.9 with a requested limit (RL) of 20.0 pCi/L for Cs-137. The calculated result (-9.253 pCi/L) is well below the RL and the replicate error ratio is 0.55 with a limit of 1. The reproducibility is valid and the sample results are not believed to be affected by this statistical anomaly. The data is provided with this narrative.

(440-176654-Q-1-B DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.113	U	1.25	1.25	3.00	2.30	pCi/L	03/07/17 05:12	03/11/17 10:55	1
Gross Beta	3.42		0.811	0.880	4.00	0.975	pCi/L	03/07/17 05:12	03/11/17 10:55	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-1.89	U	9.30	9.30	20.0	13.4	pCi/L	02/15/17 13:15	02/15/17 15:39	1
Potassium-40	-40.2	U	134	134		184	pCi/L	02/15/17 13:15	02/15/17 15:39	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00707	U	0.0817	0.0817	1.00	0.166	pCi/L	02/16/17 10:06	03/10/17 06:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110					02/16/17 10:06	03/10/17 06:12	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0865	U	0.307	0.307	1.00	0.552	pCi/L	02/16/17 14:27	03/07/17 14:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.4		40 - 110					02/16/17 14:27	03/07/17 14:30	1
Y Carrier	78.9		40 - 110					02/16/17 14:27	03/07/17 14:30	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0146	U	0.174	0.174	3.00	0.309	pCi/L	02/16/17 09:55	02/27/17 11:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	76.9		40 - 110					02/16/17 09:55	02/27/17 11:12	1
Y Carrier	96.4		40 - 110					02/16/17 09:55	02/27/17 11:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-98.2	U	170	171	500	324	pCi/L	03/08/17 12:29	03/08/17 17:37	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.266		0.1595	0.1601	1.00	0.0981	pCi/L	02/21/17 13:19	02/27/17 15:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	95.0		30 - 110					02/21/17 13:19	02/27/17 15:45	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	296211	03/07/17 05:12	MRB	TAL SL
Total/NA	Analysis	900.0		1			297296	03/11/17 10:55	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	292601	02/15/17 13:15	R1S	TAL SL
Total/NA	Analysis	901.1		1			292647	02/15/17 15:39	CDR	TAL SL
Total/NA	Prep	PrecSep-21			999.24 mL	1.0 g	292779	02/16/17 10:06	PJM	TAL SL
Total/NA	Analysis	903.0		1			296972	03/10/17 06:12	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.24 mL	1.0 g	292818	02/16/17 14:27	PJM	TAL SL
Total/NA	Analysis	904.0		1			296226	03/07/17 14:30	MLK	TAL SL
Total/NA	Prep	PrecSep-7			999.86 mL	1.0 g	292776	02/16/17 09:55	BME	TAL SL
Total/NA	Analysis	905		1			294480	02/27/17 11:12	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	296618	03/08/17 12:29	JDL	TAL SL
Total/NA	Analysis	906.0		1			296794	03/08/17 17:37	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.13 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294945	02/27/17 15:45	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-296211/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296211

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.2155	U	0.420	0.421	3.00	0.938	pCi/L	03/07/17 05:12	03/11/17 10:57	1
Gross Beta	0.07748	U	0.474	0.474	4.00	0.846	pCi/L	03/07/17 05:12	03/11/17 10:57	1

Lab Sample ID: LCS 160-296211/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	39.52		5.98	3.00	2.10	pCi/L	79	73 - 133

Lab Sample ID: LCSB 160-296211/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.0	91.75		9.70	4.00	0.983	pCi/L	101	75 - 125

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	0.113	U	49.9	30.60		4.92	3.00	1.86	pCi/L	61	60 - 140

Lab Sample ID: 440-176655-1 MSBT
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	3.42		91.0	92.37		9.77	4.00	1.08	pCi/L	98	60 - 140

Lab Sample ID: 440-176655-1 MSBTD
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Beta	3.42		91.0	92.24		9.76	4.00	1.09	pCi/L	98	60 - 140	0.01	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	0.113	U	49.9	31.37		5.11	3.00	2.23	pCi/L	63	60 - 140	0.08	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-292601/1-A
Matrix: Water
Analysis Batch: 292642

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292601

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-2.043	U	10.7	10.7	20.0	18.6	pCi/L	02/15/17 13:15	02/15/17 15:37	1
Potassium-40	-29.64	U	98.0	98.0		148	pCi/L	02/15/17 13:15	02/15/17 15:37	1

Lab Sample ID: LCS 160-292601/2-A
Matrix: Water
Analysis Batch: 292644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292601

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132500		15300		435	pCi/L	97	90 - 111
Cesium-137	47000	46370		4650	20.0	157	pCi/L	99	90 - 111
Cobalt-60	39800	38420		3800		83.8	pCi/L	97	89 - 110

Lab Sample ID: 440-176654-Q-1-B DU
Matrix: Water
Analysis Batch: 292647

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292601

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	2.41	U	-9.253	U G	14.1	20.0	20.9	pCi/L		0.55	1
Potassium-40	8.39	U	14.59	U	83.3		145	pCi/L		0.03	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292779/1-A
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292779

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01710	U	0.0996	0.0997	1.00	0.207	pCi/L	02/16/17 10:06	03/10/17 06:08	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110					02/16/17 10:06	03/10/17 06:08	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292779/2-A
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	11.12		1.25	1.00	0.194	pCi/L	99	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	87.6		40 - 110							

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.00707	U	11.3	11.65		1.30	1.00	0.169	pCi/L	103	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	87.3		40 - 110								

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 296973

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.00707	U	11.2	9.978		1.13	1.00	0.201	pCi/L	89	75 - 138	0.69	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	87.6		40 - 110										

Lab Sample ID: 180-63329-A-7-A DU
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.744		0.7010		0.216	1.00	0.180	pCi/L	0.1	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	84.7		40 - 110							

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292818/1-A
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292818

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09113	U	0.238	0.238	1.00	0.411	pCi/L	02/16/17 14:27	03/07/17 14:26	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110					02/16/17 14:27	03/07/17 14:26	1
Y Carrier	90.1		40 - 110					02/16/17 14:27	03/07/17 14:26	1

Lab Sample ID: LCS 160-292818/2-A
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	14.93		1.62	1.00	0.398	pCi/L	109	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	87.6		40 - 110						
Y Carrier	86.4		40 - 110						

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.0865	U	13.8	15.26		1.65	1.00	0.457	pCi/L	111	45 - 150
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	87.3		40 - 110								
Y Carrier	88.2		40 - 110								

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.0865	U	13.7	13.87		1.52	1.00	0.417	pCi/L	101	45 - 150	0.44	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	87.6		40 - 110										
Y Carrier	87.1		40 - 110										

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 180-63329-A-7-B DU
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.365	U	0.1016	U	0.244	1.00	0.419	pCi/L	0.53	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	84.7		40 - 110							
Y Carrier	88.6		40 - 110							

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-292776/1-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292776

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.07316	U	0.188	0.188	3.00	0.322	pCi/L	02/16/17 09:55	02/27/17 11:11	1
Carrier	%Yield	Qualifier	Limits				Prepared		Analyzed	Dil Fac
Sr Carrier	82.7		40 - 110				02/16/17 09:55		02/27/17 11:11	1
Y Carrier	95.0		40 - 110				02/16/17 09:55		02/27/17 11:11	1

Lab Sample ID: LCS 160-292776/2-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.847		0.916	3.00	0.351	pCi/L	104	75 - 125
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	81.4		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.0146	U	8.50	8.744		0.942	3.00	0.350	pCi/L	103	19 - 150
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	65.6		40 - 110								
Y Carrier	92.7		40 - 110								

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.0146	U	8.50	9.105		0.939	3.00	0.287	pCi/L	107	19 - 150	0.19	1
Carrier	%Yield	MSD Qualifier	MSD Limits										
Sr Carrier	78.2		40 - 110										
Y Carrier	91.6		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-296618/1-A
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296618

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-79.73	U	168	169	500	314	pCi/L	03/08/17 12:29	03/08/17 16:29	1

Lab Sample ID: LCS 160-296618/2-A
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296618

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2775		423	500	306	pCi/L	94	74 - 114

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 296618

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-98.2	U	2950	2590		412	500	318	pCi/L	88	67 - 130

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total/NA
Prep Batch: 296618

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-98.2	U	2950	2590		410	500	313	pCi/L	88	67 - 130	0	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	MB MB		Limits					Prepared	Analyzed	Dil Fac
%Yield	Qualifier									
Uranium-232	91.4		30 - 110					02/21/17 13:19	02/24/17 17:20	1

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121
Tracer	LCS LCS		Limits					%Rec	Limits
%Yield	Qualifier								
Uranium-232	85.9		30 - 110						

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.
				Result	Qual	Uncert. (2σ+/-)					Limits
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143
Tracer	MS MS		Limits							%Rec	Limits
%Yield	Qualifier										
Uranium-232	88.1		30 - 110								

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER Limit
				Result	Qual	Uncert. (2σ+/-)					Limits	Limit	
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146	0.01	1
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1
Tracer	MSD MSD		Limits							%Rec	Limits	RER	Limit
%Yield	Qualifier												
Uranium-232	87.1		30 - 110										

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175840-G-1-G MS

Matrix: Water

Analysis Batch: 294624

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 293712

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146		
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	96.2		30 - 110										

Lab Sample ID: 440-175840-G-1-H MSD

Matrix: Water

Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 293712

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	82.1		30 - 110										

Lab Sample ID: 440-176655-1 MS

Matrix: Water

Analysis Batch: 294629

Client Sample ID: Outfall002_20170212_Comp

Prep Type: Total/NA

Prep Batch: 293712

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146		
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	66.9		30 - 110										

Lab Sample ID: 440-176655-1 MSD

Matrix: Water

Analysis Batch: 294630

Client Sample ID: Outfall002_20170212_Comp

Prep Type: Total/NA

Prep Batch: 293712

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	85.0		30 - 110										

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Rad

Prep Batch: 292601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-292601/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-292601/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-176654-Q-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	PrecSep-7	
MB 160-292776/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-292776/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	PrecSep-7	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 292779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	PrecSep-21	
MB 160-292779/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292779/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	PrecSep-21	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	PrecSep-21	
180-63329-A-7-A DU	Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 292818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	PrecSep_0	
MB 160-292818/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292818/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	PrecSep_0	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	PrecSep_0	
180-63329-A-7-B DU	Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	ExtChrom	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	ExtChrom	

Prep Batch: 296211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	Evaporation	
MB 160-296211/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-296211/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-296211/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	Evaporation	
440-176655-1 MSBT	Outfall002_20170212_Comp	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Rad (Continued)

Prep Batch: 296211 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1 MSBTD	Outfall002_20170212_Comp	Total/NA	Water	Evaporation	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	Evaporation	

Prep Batch: 296618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-296618/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-296618/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-176655-1 MS	Outfall002_20170212_Comp	Total/NA	Water	LSC_Dist_Susp	
440-176655-1 MSD	Outfall002_20170212_Comp	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

440-176655

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 002 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606; 520.904.6944 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312; 818.599.0702 (cell)</p>	
<p>Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Test America's services under this CoC shall be performed in accordance with the TACs within Blanket Service Agreements # 2015-19. Test America and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories Inc.</p>		<p>Sample Matrix</p>		<p>MS/MSD</p>	
Sample Description	Sample I.D.	Sampling Date/Time	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 002	Outfall002_20170212_Comp	2/12/2017 10:30	500 mL Poly	3	HNO ₃	90	Yes
			1 L Glass Amber	2	None	110	No
			1L Poly	1	None	115	No
			500 mL Poly	6	None	120	Yes
			500 mL Poly	6	None	130	Yes
			500 mL Poly	1	None	150	No
			500 mL Poly	3	H ₂ SO ₄	160	Yes
			1 L Glass Amber	6	None	170	Yes
			1 L Glass Amber	6	None	180	Yes
			1L Poly	1	None	185	No
			basecatalytic vials	3	HNO ₃	316	Yes
			1 L Glass Amber	2	None	110	No
			500 mL Poly	2	None	120	No
			500 mL Poly	2	None	130	No
			1 L Glass Amber	2	None	170	No
			1 L Glass Amber	2	None	180	No

Relinquished By: <i>[Signature]</i>	Date/Time: 2-12-17 09:15	Company: SHA	Received By: <i>[Signature]</i>	Date/Time: 2/13/17 09:30	Company: [Blank]
Relinquished By: <i>[Signature]</i>	Date/Time: 2/13/17 09:30	Company: [Blank]	Received By: <i>[Signature]</i>	Date/Time: 2/13/17 09:30	Company: [Blank]

ANALYSIS REQUIRED

Total Recoverable Metals: Mercury (E245)	
(SVOCs E825)	
2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, PCP	
alpha-BHC (E609)	
Ammonia-N (350.2)	
TSS (180.2 (SM2540D))	
Turbidity, TDS (SM2540C/E180.1)	
Perchlorate (E300)	
Cl ⁻ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Surfactants (MBAS) (SM5540C/E425.1)	X
BOD ₅ (20 degrees C) (E405.1 (SM5210B_BODcalc))	X
TCDD (and all congeners) (E1613B)	
(E200.7): Zn	X
(E200.8): Cu, Pb, Cd, Se	
Total Recoverable Metals:	X

Turn-around time: (Check)
 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X ___
 48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity: (Check)
 Intact: ___ On Ice: ___

Store samples for 6 months.
 Data Requirements: (Check)
 No Level IV: ___ All Level IV: ___ X ___



440-176655 Chain of Custody

0.2/0.6
 0.5/0.8
 0.9/1.0
 1.1/1.4 & so on



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176655-2

Login Number: 176655

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176655-2

Login Number: 176655

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/14/17 12:52 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.0,2.5,1.2,0.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
180-63329-A-7-A DU	Duplicate	84.7
440-176655-1	Outfall002_20170212_Comp	91.4
440-176655-1 MS	Outfall002_20170212_Comp	87.3
440-176655-1 MSD	Outfall002_20170212_Comp	87.6
LCS 160-292779/2-A	Lab Control Sample	87.6
MB 160-292779/1-A	Method Blank	84.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
180-63329-A-7-B DU	Duplicate	84.7	88.6
440-176655-1	Outfall002_20170212_Comp	91.4	78.9
440-176655-1 MS	Outfall002_20170212_Comp	87.3	88.2
440-176655-1 MSD	Outfall002_20170212_Comp	87.6	87.1
LCS 160-292818/2-A	Lab Control Sample	87.6	86.4
MB 160-292818/1-A	Method Blank	84.7	90.1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-176655-1	Outfall002_20170212_Comp	76.9	96.4
440-176655-1 MS	Outfall002_20170212_Comp	65.6	92.7
440-176655-1 MSD	Outfall002_20170212_Comp	78.2	91.6
LCS 160-292776/2-A	Lab Control Sample	81.4	92.7
MB 160-292776/1-A	Method Blank	82.7	95.0

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-E MS	Matrix Spike	88.1

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1
440-175840-G-1-G MS	Matrix Spike	96.2
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-176655-1	Outfall002_20170212_Comp	95.0
440-176655-1 MS	Outfall002_20170212_Comp	66.9
440-176655-1 MSD	Outfall002_20170212_Comp	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176655-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 9, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-176655-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170212_ Comp	440-176655-1	N/A	Water	2/12/17 8:30 AM	E200.8
Outfall002_20170212_ Comp_F	440-176655-3	N/A	Water	2/12/17 8:30 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176655-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHOD 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 9, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for zinc, was met with the following exception. Sample Outfall002_20170212_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 30.5 hours after receipt. The result for dissolved zinc was qualified as estimated (UJ).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for zinc were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170212_Comp and Outfall002_20170212_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPD were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.



IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401766554

Analysis Method *E200.8*

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall002_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176655-4

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 4:23:36 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 4:23:36 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176655-1	Outfall002_20170212_Comp	Water	02/12/17 08:30	02/13/17 06:30
440-176655-3	Outfall002_20170212_Comp_F	Water	02/12/17 08:30	02/13/17 06:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Job ID: 440-176655-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176655-4

Comments

200.7 metals analyzed with 200.8 method with 200.7 RLs

Receipt

The samples were received on 2/13/2017 6:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6° C, 0.9° C, 1.0° C and 1.4° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/20/17 10:20	02/22/17 16:42	1

Client Sample ID: Outfall002_20170212_Comp_F

Lab Sample ID: 440-176655-3

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		02/20/17 12:28	02/20/17 18:00	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Client Sample ID: Outfall002_20170212_Comp

Lab Sample ID: 440-176655-1

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	389269	02/20/17 10:20	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			389969	02/22/17 16:42	RC	TAL IRV

Client Sample ID: Outfall002_20170212_Comp_F

Lab Sample ID: 440-176655-3

Date Collected: 02/12/17 08:30

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			250 mL	250 mL	388059	02/13/17 16:03	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	389315	02/20/17 12:28	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			389474	02/20/17 18:00	EN	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/20/17 10:20	02/22/17 16:37	1

Lab Sample ID: LCS 440-389269/2-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	78.4		ug/L		98	85 - 115

Lab Sample ID: 440-176655-1 MS
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	4.12		80.0	82.4		ug/L		98	70 - 130

Lab Sample ID: 440-176655-1 MSD
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Outfall002_20170212_Comp
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	4.12		80.0	79.9		ug/L		95	70 - 130	3	20

Lab Sample ID: MB 440-388059/1-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389315

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/20/17 12:28	02/20/17 17:54	1

Lab Sample ID: LCS 440-388059/2-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	74.4		ug/L		93	85 - 115

Lab Sample ID: 440-176655-3 MS
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Outfall002_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	ND	QP	80.0	76.1		ug/L		95	70 - 130

Lab Sample ID: 440-176655-3 MSD
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Outfall002_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	ND	QP	80.0	77.4		ug/L		97	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Metals

Filtration Batch: 388059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388059/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	FILTRATION	
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 389269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total Recoverable	Water	200.2	
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-176655-1 MS	Outfall002_20170212_Comp	Total Recoverable	Water	200.2	
440-176655-1 MSD	Outfall002_20170212_Comp	Total Recoverable	Water	200.2	

Prep Batch: 389315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	200.2	388059
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.2	388059
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.2	388059
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	200.2	388059
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	200.2	388059

Analysis Batch: 389474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-3	Outfall002_20170212_Comp_F	Dissolved	Water	200.8	389315
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.8	389315
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.8	389315
440-176655-3 MS	Outfall002_20170212_Comp_F	Dissolved	Water	200.8	389315
440-176655-3 MSD	Outfall002_20170212_Comp_F	Dissolved	Water	200.8	389315

Analysis Batch: 389969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-1	Outfall002_20170212_Comp	Total Recoverable	Water	200.8	389269
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.8	389269
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389269
440-176655-1 MS	Outfall002_20170212_Comp	Total Recoverable	Water	200.8	389269
440-176655-1 MSD	Outfall002_20170212_Comp	Total Recoverable	Water	200.8	389269

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-176655-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176655-4

Login Number: 176655

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177318-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177318-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170217_ Grab	440-177318-1	N/A	Water	2/17/2017 8:30:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177318-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170217_Grab. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170217 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

III.5. **INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. **COMPOUND IDENTIFICATION**

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. **TENTATIVELY IDENTIFIED COMPOUNDS**

The laboratory did not report TICs for this SDG.

III.9. **SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.

IV. **VARIOUS METHODS — GENERAL CHEMISTRY**

Marcia Hilchey of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA Methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. **HOLDING TIMES**

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. **CALIBRATION**

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.1. QUALITY CONTROL SAMPLES

IV.1.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.1.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.1.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.2. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance or settleable solids analyses and no sample results were qualified.

IV.3. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.3.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.3.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773181

Analysis Method E120.1

Sample Name Outfall002_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-177318-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	460	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall002_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-177318-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.2	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall002_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-177318-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall002_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-177318-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177318-1

Client Project/Site: Routine Outfall 002 Grab

Revision: 2

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/4/2017 9:25:52 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/4/2017 9:25:52 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177318-1	Outfall002_20170217_Grab	Water	02/17/17 08:30	02/17/17 19:50
440-177318-3	TB-20170217	Water	02/17/17 08:30	02/17/17 19:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Job ID: 440-177318-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177318-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Revised -ms/msd needed to be re-calc'd to only include the 3 cmpds per client request.

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 434.0° C.

GC/MS VOA

Method(s) 624: The method blank for analytical batch 440-391117 contained Methylene Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390730 and analytical batch 440-390827. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Client Sample ID: Outfall002_20170217_Grab

Lab Sample ID: 440-177318-1

Date Collected: 02/17/17 08:30

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 21:32	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 21:32	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 21:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					02/28/17 21:32	1
Dibromofluoromethane (Surr)	102		76 - 132					02/28/17 21:32	1
Toluene-d8 (Surr)	117		80 - 128					02/28/17 21:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.2	1.5	mg/L		02/27/17 09:28	02/27/17 14:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	460		1.0	1.0	umhos/cm			02/21/17 10:01	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/18/17 13:49	1

Client Sample ID: TB-20170217

Lab Sample ID: 440-177318-3

Date Collected: 02/17/17 08:30

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 23:00	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 23:00	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 23:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					02/28/17 23:00	1
Dibromofluoromethane (Surr)	103		76 - 132					02/28/17 23:00	1
Toluene-d8 (Surr)	110		80 - 128					02/28/17 23:00	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Client Sample ID: Outfall002_20170217_Grab

Lab Sample ID: 440-177318-1

Date Collected: 02/17/17 08:30

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391117	02/28/17 21:32	K1S	TAL IRV
Total/NA	Analysis	120.1		1			389480	02/21/17 10:01	XL	TAL IRV
Total/NA	Prep	1664A			960 mL	1000 mL	390730	02/27/17 09:28	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390827	02/27/17 14:48	JSS	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	389106	02/18/17 13:49	RB	TAL IRV

Client Sample ID: TB-20170217

Lab Sample ID: 440-177318-3

Date Collected: 02/17/17 08:30

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391117	02/28/17 23:00	K1S	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-391117/4
Matrix: Water
Analysis Batch: 391117

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 20:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 20:04	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 20:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		02/28/17 20:04	1
Dibromofluoromethane (Surr)	100		76 - 132		02/28/17 20:04	1
Toluene-d8 (Surr)	110		80 - 128		02/28/17 20:04	1

Lab Sample ID: LCS 440-391117/5
Matrix: Water
Analysis Batch: 391117

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	24.5		ug/L		98	70 - 130
1,2-Dichloroethane	25.0	25.9		ug/L		104	57 - 138
Trichloroethene	25.0	27.1		ug/L		108	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Lab Sample ID: 440-177318-1 MS
Matrix: Water
Analysis Batch: 391117

Client Sample ID: Outfall002_20170217_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	23.7		ug/L		95	70 - 130
1,2-Dichloroethane	ND		25.0	25.5		ug/L		102	56 - 146
Trichloroethene	ND		25.0	26.4		ug/L		106	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	98		76 - 132
Toluene-d8 (Surr)	100		80 - 128

Lab Sample ID: 440-177318-1 MSD
Matrix: Water
Analysis Batch: 391117

Client Sample ID: Outfall002_20170217_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,1-Dichloroethene	ND		25.0	24.7		ug/L		99	70 - 130	4	20
1,2-Dichloroethane	ND		25.0	26.7		ug/L		107	56 - 146	5	20
Trichloroethene	ND		25.0	27.4		ug/L		109	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177318-1 MSD
Matrix: Water
Analysis Batch: 391117

Client Sample ID: Outfall002_20170217_Grab
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	97		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-389480/3
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			02/21/17 07:48	1

Lab Sample ID: LCS 440-389480/4
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	766		umhos/cm		100	90 - 110

Lab Sample ID: 440-176949-B-1 DU
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	10		9.82		umhos/cm		4	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390730/1-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/27/17 09:28	02/27/17 14:48	1

Lab Sample ID: LCS 440-390730/2-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.1		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-390730/3-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390730

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	36.4		mg/L		91	78 - 114	1	11

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

GC/MS VOA

Analysis Batch: 391117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177318-1	Outfall002_20170217_Grab	Total/NA	Water	624	
440-177318-3	TB-20170217	Total/NA	Water	624	
MB 440-391117/4	Method Blank	Total/NA	Water	624	
LCS 440-391117/5	Lab Control Sample	Total/NA	Water	624	
440-177318-1 MS	Outfall002_20170217_Grab	Total/NA	Water	624	
440-177318-1 MSD	Outfall002_20170217_Grab	Total/NA	Water	624	

General Chemistry

Analysis Batch: 389106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177318-1	Outfall002_20170217_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 389480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177318-1	Outfall002_20170217_Grab	Total/NA	Water	120.1	
MB 440-389480/3	Method Blank	Total/NA	Water	120.1	
LCS 440-389480/4	Lab Control Sample	Total/NA	Water	120.1	
440-176949-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 390730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177318-1	Outfall002_20170217_Grab	Total/NA	Water	1664A	
MB 440-390730/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390730/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390730/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177318-1	Outfall002_20170217_Grab	Total/NA	Water	1664A	390730
MB 440-390730/1-A	Method Blank	Total/NA	Water	1664A	390730
LCS 440-390730/2-A	Lab Control Sample	Total/NA	Water	1664A	390730
LCSD 440-390730/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390730

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-177318-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichloroethane
624		Water	Trichloroethene



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177318-1

Login Number: 177318

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177394-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2017

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Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MEC^x Project No.:** 1272.003H.01**Sample Delivery Group:** 440-177394-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170218_Comp	440-177394-1	N/A	Water	2/18/17 12:00 PM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall002_20170218_Comp_F	440-177394-3	N/A	Water	2/18/17 12:00 PM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177394-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Sample volume for the chronic toxicity analysis was listed on the COC. This has been hand corrected and crossed off the COC with a note stating that the volume was not collected.

The following issue was noted:

- Some corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 5, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except TCDD and TCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result above the reporting limit. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall002_20170218_Comp. The result for total



HpCDD was qualified as nondetected (U) at the level of contamination. The reviewer verified that peaks comprising the results for remaining detected totals in the sample included more peaks or different peaks than the method blank totals. The sample results for remaining total detects were qualified as estimated (J). The result for total PeCDD was subsequently qualified as an estimated nondetect (see Compound Quantification and Reported Detection Limits section).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for those results flagged by the laboratory as EMPC results. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. The result for total PeCDD consisted only of the isomer qualified as an EMPC; therefore, the result for total PeCDD was also qualified as an estimated nondetect (UJ). Remaining totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8, 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 14, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall002_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with the total metals analysis; this review is based on summary data for that CRQL.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that a dissolved method blank was not analyzed for Method 245.1. It should be further noted that complete raw data was not provided for calibration blanks and the method blank associated with total metals analysis; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total metals; this review is based on summary data for that ICSA analysis.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%. It should be noted that a dissolved LCS was not analyzed for Method 245.1.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on samples Outfall002_20170218_Comp and Outfall002_20170218_Comp_F for Method 200.8, and on sample Outfall002_20170218_Comp for Method 245.1. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. **SERIAL DILUTION**

No serial dilution analyses were performed on a sample in this SDG.

IV.5. **INTERNAL STANDARDS PERFORMANCE**

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. **FIELD QC SAMPLES**

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. **FIELD DUPLICATES**

There were no field duplicate samples identified for this SDG.

V. **METHOD 608 – ALPHA BHC**

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. **HOLDING TIMES**

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.



V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.

V.3.2. LABORATORY CONTROL SAMPLES

The recovery of alpha BHC was within the laboratory control limits of 37-134%.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the sample of this SDG. Recoveries of alpha BHC and the RPD were within the laboratory control limits of 40-120% and $\leq 30\%$, respectively.

V.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^x reviewed the SDG on April 13, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).



VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110% and 85-115%, respectfully. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. *METHOD BLANKS*

Method blanks and calibration blanks had no detects.

VI.3.2. *LABORATORY CONTROL SAMPLES*

The recovery was within the method control limits of 85-115%.

VI.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170218_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.



VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^x reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1)*, *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the

midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 7, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1 and 300.0, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540 and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

VIII.1. HOLDING TIMES

Two results were reported by the laboratory for the sample Outfall002_20170218_Comp MBAS analysis. A non-detect result (0.050 U $\mu\text{g/L}$) is reported for the analysis performed within the 48 hour analytical holding time. A detect above MDL at 0.067 J mg/L is reported for the analysis performed outside holding time on 2/24/2017. A reporting limit check standard analysis was not performed for the analysis within holding time. Therefore, the detect analyzed outside holding time was reported as estimated (J) for holding time, and the nondetect result was rejected (R). The remaining analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate, nitrite, and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION



Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recoveries for ammonia and MBAS were within the laboratory control limits of 10-200% and 50-150%, respectively. Analytical balance calibration logs were provided by the laboratory.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES/LABORATORY CONTROL SAMPLE DUPLICATES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs were $\leq 20\%$.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on the sample Outfall002_20170218_Comp for turbidity and TDS. The RPDs were within the laboratory control limits.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample Outfall002_20170218. The percent recoveries and RPDs were within the laboratory control limits.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were flagged as estimated (J) and coded with a DNQ to comply with the NPDES permit. Reported nondetects are valid to the MDL.

Turbidity in sample Outfall002_20170218_Comp was reported from a 20 \times dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773941

Analysis Method E1613B

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000032	0.00010	0.0000012	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00047	0.00010	0.0000022	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000010	0.000050	0.00000080	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000041	0.000050	0.0000014	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000026	0.000050	0.0000010	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000014	0.000050	0.00000043	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000017	0.000050	0.00000053	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000020	0.000050	0.00000042	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000034	0.000050	0.00000060	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000019	0.000050	0.00000042	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000022	0.000050	0.00000048	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000017	0.000050	0.00000059	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000016	0.000050	0.00000074	ug/L	J,DXq	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000020	0.000050	0.00000038	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000017	0.000050	0.00000061	ug/L	J,DXq	UJ	*III
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000070	0.000010	0.00000037	ug/L	J,DXq	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000082	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000043	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000026	0.000050	0.00000092	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000074	0.000050	0.0000014	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000013	0.000050	0.00000041	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000011	0.000050	0.00000054	ug/L	J,DXMBq	J	B, DNQ, *III

Friday, April 14, 2017

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000034	0.000050	0.00000060	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000016	0.000050	0.00000074	ug/L	J,DXq	UJ	*III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000070	0.000010	0.00000037	ug/L	J,DXq	J	DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000043	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	140	2.0	0.80	NTU			

Analysis Method E200.8

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	4.1	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.9	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Sample Name Outfall002_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	1.5	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall002_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177394-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	7.6	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.87	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.87	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	62	5.0	2.5	mg/L			

Analysis Method E314.0**Sample Name** Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0051	0.0026	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	6.09	0.508	ug/L	U	U	

Analysis Method E625

2,4-Dinitrotoluene	N	121-14-2	ND	5.08	2.03	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.08	2.03	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	5.08	1.02	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	5.08	1.02	ug/L	U	U

Analysis Method SM2540C

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	230	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	67	6.7	3.3	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.4	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	ND	0.10	0.050	mg/L	U	R	D
Surfactants as MBAS	N	SURFASMBAS	0.067	0.10	0.050	mg/L	J,DXBU	J	DNQ, H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177394-1

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/8/2017 6:45:10 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/8/2017 6:45:10 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177394-1	Outfall002_20170218_Comp	Water	02/18/17 12:00	02/18/17 18:40
440-177394-3	Outfall002_20170218_Comp_F	Water	02/18/17 12:00	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Job ID: 440-177394-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177394-1**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.4° C, 2.1° C, 3.4° C, 4.2° C and 4.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Outfall002_20170218_Comp_Extra (440-177394-2). received #2 not listed on coc.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389508 could not be evaluated for accuracy and precision; however, the estimated results are reported per client request. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

Method(s) 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following sample run on instrument 9D2 exceeded this criteria: Outfall002_20170218_Comp (440-177394-1) and (CCV 320-152915/2). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.09	0.508	ug/L		02/25/17 09:17	02/28/17 13:55	1
Bis(2-ethylhexyl) phthalate	ND		5.08	2.03	ug/L		02/25/17 09:17	02/28/17 13:55	1
N-Nitrosodimethylamine	ND		5.08	1.02	ug/L		02/25/17 09:17	02/28/17 13:55	1
Pentachlorophenol	ND		5.08	1.02	ug/L		02/25/17 09:17	02/28/17 13:55	1
2,4-Dinitrotoluene	ND		5.08	2.03	ug/L		02/25/17 09:17	02/28/17 13:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	74		40 - 120	02/25/17 09:17	02/28/17 13:55	1
2-Fluorobiphenyl	65		50 - 120	02/25/17 09:17	02/28/17 13:55	1
2-Fluorophenol	60		30 - 120	02/25/17 09:17	02/28/17 13:55	1
Nitrobenzene-d5	67		45 - 120	02/25/17 09:17	02/28/17 13:55	1
Phenol-d6	55		35 - 120	02/25/17 09:17	02/28/17 13:55	1
Terphenyl-d14	49		37 - 144	02/25/17 09:17	02/28/17 13:55	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0051	0.0026	ug/L		02/21/17 06:57	02/23/17 01:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	49		10 - 150	02/21/17 06:57	02/23/17 01:08	1
DCB Decachlorobiphenyl (Surr)	68		18 - 134	02/21/17 06:57	02/23/17 01:08	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.6		0.50	0.25	mg/L			02/21/17 15:55	1
Nitrate as N	0.87		0.11	0.055	mg/L			02/20/17 07:37	1
Nitrite as N	ND		0.15	0.070	mg/L			02/20/17 07:37	1
Sulfate	62		5.0	2.5	mg/L			02/21/17 17:39	10

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/22/17 11:56	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.87		0.15	0.070	mg/L			03/03/17 11:21	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1
1,2,3,7,8-PeCDD	0.0000016	J,DX q	0.000050	0.0000007	ug/L		02/27/17 08:20	03/01/17 01:23	1
1,2,3,7,8-PeCDF	0.0000017	J,DX MB	0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 01:23	1
2,3,4,7,8-PeCDF	0.0000017	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	03/01/17 01:23	1
1,2,3,4,7,8-HxCDD	0.0000017	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 01:23	1
1,2,3,6,7,8-HxCDD	0.0000034	J,DX	0.000050	0.0000006	ug/L		02/27/17 08:20	03/01/17 01:23	1
1,2,3,7,8,9-HxCDD	0.0000022	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000014	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1
				3					
1,2,3,6,7,8-HxCDF	0.0000020	J,DX MB	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1
				2					
1,2,3,7,8,9-HxCDF	0.0000019	J,DX MB	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1
				2					
2,3,4,6,7,8-HxCDF	0.0000020	J,DX MB	0.000050	0.0000003	ug/L		02/27/17 08:20	03/01/17 01:23	1
				8					
1,2,3,4,6,7,8-HpCDD	0.000041	J,DX MB	0.000050	0.0000014	ug/L		02/27/17 08:20	03/01/17 01:23	1
1,2,3,4,6,7,8-HpCDF	0.000010	J,DX MB	0.000050	0.0000008	ug/L		02/27/17 08:20	03/01/17 01:23	1
				0					
1,2,3,4,7,8,9-HpCDF	0.0000026	J,DX	0.000050	0.0000010	ug/L		02/27/17 08:20	03/01/17 01:23	1
OCDD	0.00047	MB	0.00010	0.0000022	ug/L		02/27/17 08:20	03/01/17 01:23	1
OCDF	0.000032	J,DX MB	0.00010	0.0000012	ug/L		02/27/17 08:20	03/01/17 01:23	1
Total TCDD	ND		0.000010	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1
				3					
Total TCDF	0.0000070	J,DX q	0.000010	0.0000003	ug/L		02/27/17 08:20	03/01/17 01:23	1
				7					
Total PeCDD	0.0000016	J,DX q	0.000050	0.0000007	ug/L		02/27/17 08:20	03/01/17 01:23	1
				4					
Total PeCDF	0.0000034	J,DX MB q	0.000050	0.0000006	ug/L		02/27/17 08:20	03/01/17 01:23	1
				0					
Total HxCDD	0.000011	J,DX MB q	0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 01:23	1
				4					
Total HxCDF	0.000013	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 01:23	1
				1					
Total HpCDD	0.000074	J,DX MB q	0.000050	0.0000014	ug/L		02/27/17 08:20	03/01/17 01:23	1
Total HpCDF	0.000026	J,DX MB	0.000050	0.0000009	ug/L		02/27/17 08:20	03/01/17 01:23	1
				2					

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	58		25 - 164	02/27/17 08:20	03/01/17 01:23	1
13C-2,3,7,8-TCDF	58		24 - 169	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,7,8-PeCDD	46		25 - 181	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,7,8-PeCDF	52		24 - 185	02/27/17 08:20	03/01/17 01:23	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,4,7,8-HxCDD	72		32 - 141	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,6,7,8-HxCDD	66		28 - 130	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	02/27/17 08:20	03/01/17 01:23	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,4,6,7,8-HpCDF	62		28 - 143	02/27/17 08:20	03/01/17 01:23	1
13C-1,2,3,4,7,8,9-HpCDF	61		26 - 138	02/27/17 08:20	03/01/17 01:23	1
13C-OCDD	48		17 - 157	02/27/17 08:20	03/01/17 01:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197	02/27/17 08:20	03/01/17 01:23	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000008	ug/L		02/27/17 08:20	03/01/17 23:20	1
				2					

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	60		24 - 169	02/27/17 08:20	03/01/17 23:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	02/27/17 08:20	03/01/17 23:20	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:47	1
Copper	4.1		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:47	1
Lead	1.9		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:47	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:47	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:25	02/28/17 18:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	140		2.0	0.80	NTU			02/20/17 11:26	20
Total Dissolved Solids	230		10	5.0	mg/L			02/23/17 08:39	1
Total Suspended Solids	67		6.7	3.3	mg/L			02/24/17 11:16	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/23/17 19:48	1
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/18/17 21:13	1
Biochemical Oxygen Demand	1.4	J,DX	2.0	0.50	mg/L			02/20/17 06:41	1

Client Sample ID: Outfall002_20170218_Comp_F

Lab Sample ID: 440-177394-3

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/23/17 15:59	02/27/17 14:47	1
Copper	1.5	J,DX QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:47	1
Lead	ND	QP	1.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:47	1
Selenium	ND	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:47	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/23/17 23:22	02/24/17 23:16	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			985 mL	2 mL	390550	02/25/17 09:17	JC1	TAL IRV
Total/NA	Analysis	625		1			390988	02/28/17 13:55	DF	TAL IRV
Total/NA	Prep	608			980 mL	2 mL	389220	02/21/17 06:57	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			389885	02/23/17 01:08	KS	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389508	02/21/17 15:55	TMB	TAL IRV
Total/NA	Analysis	300.0		10			389508	02/21/17 17:39	TMB	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389206	02/20/17 07:37	NN	TAL IRV
Total/NA	Analysis	314.0		1			389791	02/22/17 11:56	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391863	03/03/17 11:21	TLN	TAL IRV
Total/NA	Prep	1613B			998.5 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B		1			152750	03/01/17 01:23	SMA	TAL SAC
Total/NA	Prep	1613B	RA		998.5 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			152915	03/01/17 23:20	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:47	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390898	02/27/17 20:25	DB	TAL IRV
Total/NA	Analysis	245.1		1			391217	02/28/17 18:19	DB	TAL IRV
Total/NA	Analysis	180.1		20			389294	02/20/17 11:26	ST	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	150 mL	1000 mL	390386	02/24/17 11:16	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 17:59	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	390268	02/23/17 19:48	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	389129	02/18/17 21:13	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			389203	02/20/17 06:41	XL	TAL IRV

Client Sample ID: Outfall002_20170218_Comp_F

Lab Sample ID: 440-177394-3

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 14:47	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390886	02/23/17 23:22	DB	TAL IRV
Dissolved	Analysis	245.1		1			391177	02/24/17 23:16	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-390550/1-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 390550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	76		40 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorobiphenyl	62		50 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorophenol	58		30 - 120	02/25/17 09:17	02/28/17 11:32	1
Nitrobenzene-d5	60		45 - 120	02/25/17 09:17	02/28/17 11:32	1
Phenol-d6	53		35 - 120	02/25/17 09:17	02/28/17 11:32	1
Terphenyl-d14	84		37 - 144	02/25/17 09:17	02/28/17 11:32	1

Lab Sample ID: LCS 440-390550/2-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	7.592		ug/L		76	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	8.366		ug/L		84	10 - 150
N-Nitrosodimethylamine	10.0	6.704		ug/L		67	26 - 117
Pentachlorophenol	20.0	15.14		ug/L		76	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	84		40 - 120
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	63		30 - 120
Nitrobenzene-d5	69		45 - 120
Phenol-d6	61		35 - 120
Terphenyl-d14	80		37 - 144

Lab Sample ID: 440-177394-1 MS

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Outfall002_20170218_Comp

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.4	7.480		ug/L		72	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.4	3.066	J,DX	ug/L		29	10 - 150
N-Nitrosodimethylamine	ND		10.4	6.515		ug/L		63	12 - 123
Pentachlorophenol	ND		20.8	15.07		ug/L		72	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	75		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	59		30 - 120
Nitrobenzene-d5	64		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 390550

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Phenol-d6	60		35 - 120
Terphenyl-d14	30	LG	37 - 144

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec.		RPD	
				Result	Qualifier				Limits	RPD	Limit	
2,4,6-Trichlorophenol	ND		9.76	6.996		ug/L		72	37 - 144	7	30	
Bis(2-ethylhexyl) phthalate	ND		9.76	3.659	J,DX	ug/L		38	10 - 150	18	25	
N-Nitrosodimethylamine	ND		9.76	6.496		ug/L		67	12 - 123	0	35	
Pentachlorophenol	ND		19.5	14.08		ug/L		72	14 - 150	7	25	

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	73		40 - 120
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	57		30 - 120
Nitrobenzene-d5	64		45 - 120
Phenol-d6	60		35 - 120
Terphenyl-d14	36	LG	37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-389220/1-A
Matrix: Water
Analysis Batch: 390125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389220

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		02/20/17 07:21	02/23/17 17:11	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	43		10 - 150	02/20/17 07:21	02/23/17 17:11	1
DCB Decachlorobiphenyl (Surr)	59		18 - 134	02/20/17 07:21	02/23/17 17:11	1

Lab Sample ID: LCS 440-389220/5-A
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
alpha-BHC	0.200	0.131	PI	ug/L		66	37 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	58	PI	10 - 150
DCB Decachlorobiphenyl (Surr)	75	PI	18 - 134

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	ND		0.207	0.163		ug/L		78	40 - 120
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
Tetrachloro-m-xylene	72		10 - 150						
DCB Decachlorobiphenyl (Surr)	86		18 - 134						

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
alpha-BHC	ND		0.194	0.144		ug/L		74	40 - 120	12	30
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	65		10 - 150								
DCB Decachlorobiphenyl (Surr)	91		18 - 134								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389206/3
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/20/17 07:21	1
Nitrite as N	ND		0.15	0.070	mg/L			02/20/17 07:21	1

Lab Sample ID: LCS 440-389206/2
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nitrate as N	1.13	1.18		mg/L		105	90 - 110
Nitrite as N	1.52	1.62		mg/L		106	90 - 110

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nitrate as N	0.87		1.13	2.03		mg/L		103	80 - 120
Nitrite as N	ND		1.52	1.70		mg/L		112	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 389206

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.87		1.13	2.07		mg/L		106	80 - 120	2	20
Nitrite as N	ND		1.52	1.74		mg/L		114	80 - 120	2	20

Lab Sample ID: MB 440-389508/4
Matrix: Water
Analysis Batch: 389508

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/21/17 11:29	1
Sulfate	ND		0.50	0.25	mg/L			02/21/17 11:29	1

Lab Sample ID: LCS 440-389508/2
Matrix: Water
Analysis Batch: 389508

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.78		mg/L		96	90 - 110
Sulfate	5.00	5.03		mg/L		101	90 - 110

Lab Sample ID: LCSD 440-389508/18
Matrix: Water
Analysis Batch: 389508

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5.00	4.54		mg/L		91	90 - 110	5	20
Sulfate	5.00	4.87		mg/L		97	90 - 110	3	20

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 389508

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.6		5.00	12.3		mg/L		95	80 - 120
Sulfate	72	EY	5.00	75.5	EY BB	mg/L		80	80 - 120

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 389508

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	7.6		5.00	12.3		mg/L		94	80 - 120	0	20
Sulfate	72	EY	5.00	76.2	EY BB	mg/L		93	80 - 120	1	20

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-389791/3
Matrix: Water
Analysis Batch: 389791

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/22/17 10:18	1

Lab Sample ID: LCS 440-389791/2
Matrix: Water
Analysis Batch: 389791

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	21.3		ug/L		85	85 - 115

Lab Sample ID: MRL 440-389791/5
Matrix: Water
Analysis Batch: 389791

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.99	J,DX	ug/L		100	75 - 125

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 389791

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.4		ug/L		109	80 - 120

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 389791

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perchlorate	ND		25.0	27.9		ug/L		112	80 - 120	2	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,7,8-TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDF	0.00000140	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDF	0.00000112	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,6,7,8-HxCDF	0.000000796	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDD	0.00000372	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDF	0.00000131	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDD	0.0000108	J,DX	0.00010	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDF	0.00000612	J,DX	0.00010	0.0000015	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDD	0.000000537	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDD	0.00000118	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDF	0.00000331	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDD	0.00000696	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDF	0.00000131	J,DX q	0.000050	0.0000012	ug/L		02/27/17 08:20	02/28/17 23:14	1
		MB MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	52		25 - 164				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,7,8-TCDF	53		24 - 169				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDF	45		24 - 185				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,7,8-PeCDF	49		21 - 178				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				02/27/17 08:20	02/28/17 23:14	1
13C-OCDD	35		17 - 157				02/27/17 08:20	02/28/17 23:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Surrogate	MB MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery Qualifier				
37Cl4-2,3,7,8-TCDD	89	35 - 197	02/27/17 08:20	02/28/17 23:14	1

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000223		ug/L		111	67 - 158
2,3,7,8-TCDF	0.000200	0.000193		ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00120		ug/L		120	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00101		ug/L		101	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100		ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922		ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000968		ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00118	MB	ug/L		118	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000993	MB	ug/L		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000998		ug/L		100	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-1,2,3,7,8-PeCDD	48		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-OCDD	55		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	86		31 - 191

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152230/3-A

Matrix: Water

Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000235		ug/L		117	67 - 158	5	50
2,3,7,8-TCDF	0.000200	0.000211		ug/L		106	75 - 158	9	50
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	0	50
1,2,3,7,8-PeCDF	0.00100	0.00114	MB	ug/L		114	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000949		ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000959		ug/L		96	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000950		ug/L		95	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106	MB	ug/L		106	78 - 130	1	50
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156	0	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00116	MB	ug/L		116	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122	9	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939		ug/L		94	78 - 138	6	50
OCDD	0.00200	0.00209	MB	ug/L		104	78 - 144	4	50
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	9	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	51		20 - 175
13C-2,3,7,8-TCDF	51		22 - 152
13C-1,2,3,7,8-PeCDD	40		21 - 227
13C-1,2,3,7,8-PeCDF	44		21 - 192
13C-2,3,4,7,8-PeCDF	50		13 - 328
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,6,7,8-HxCDD	52		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-2,3,4,6,7,8-HxCDF	52		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	41		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	47		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	50		20 - 186
13C-OCDD	38		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A

Matrix: Water

Analysis Batch: 391937

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:44	1
Copper	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	73.8		ug/L		92	85 - 115
Copper	80.0	75.2		ug/L		94	85 - 115
Lead	80.0	71.8		ug/L		90	85 - 115
Selenium	80.0	74.2		ug/L		93	85 - 115

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130
Copper	4.1		80.0	79.8		ug/L		95	70 - 130
Lead	1.9		80.0	77.1		ug/L		94	70 - 130
Selenium	ND		80.0	72.9		ug/L		91	70 - 130

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	75.1		ug/L		94	70 - 130	2	20
Copper	4.1		80.0	77.7		ug/L		92	70 - 130	3	20
Lead	1.9		80.0	75.3		ug/L		92	70 - 130	2	20
Selenium	ND		80.0	72.2		ug/L		90	70 - 130	1	20

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/23/17 15:59	02/27/17 14:41	1
Copper	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1
Lead	ND		1.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1
Selenium	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.7		ug/L		96	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Copper	80.0	90.7		ug/L		113	85 - 115
Lead	80.0	78.2		ug/L		98	85 - 115
Selenium	80.0	78.6		ug/L		98	85 - 115

Lab Sample ID: 440-177394-3 MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall002_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	76.0		ug/L		95	70 - 130
Copper	1.5	J,DX QP	80.0	76.5		ug/L		94	70 - 130
Lead	ND	QP	80.0	76.0		ug/L		95	70 - 130
Selenium	ND	QP	80.0	78.4		ug/L		98	70 - 130

Lab Sample ID: 440-177394-3 MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall002_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	74.8		ug/L		93	70 - 130	2	20
Copper	1.5	J,DX QP	80.0	77.3		ug/L		95	70 - 130	1	20
Lead	ND	QP	80.0	75.9		ug/L		95	70 - 130	0	20
Selenium	ND	QP	80.0	76.2		ug/L		95	70 - 130	3	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390886/1-A
Matrix: Water
Analysis Batch: 391177

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390886

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/23/17 23:22	02/24/17 23:10	1

Lab Sample ID: LCS 440-390886/2-A
Matrix: Water
Analysis Batch: 391177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390886

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.94		ug/L		99	85 - 115

Lab Sample ID: MB 440-390898/1-A
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390898

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:25	02/28/17 18:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-390898/2-A
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390898

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.46		ug/L		106	85 - 115

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 390898

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.12		ug/L		102	70 - 130

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 390898

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.87		ug/L		98	70 - 130	3	20

Lab Sample ID: 440-177394-3 MS
Matrix: Water
Analysis Batch: 391177

Client Sample ID: Outfall002_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390886

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.29		ug/L		104	70 - 130

Lab Sample ID: 440-177394-3 MSD
Matrix: Water
Analysis Batch: 391177

Client Sample ID: Outfall002_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390886

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.29		ug/L		104	70 - 130	0	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-389294/5
Matrix: Water
Analysis Batch: 389294

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/20/17 11:26	1

Lab Sample ID: 440-177394-1 DU
Matrix: Water
Analysis Batch: 389294

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	140		143		NTU		0.1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177394-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	230		223		mg/L		1	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-390386/1
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/24/17 11:16	1

Lab Sample ID: LCS 440-390386/2
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	953		mg/L		95	85 - 115

Lab Sample ID: 440-177399-O-1 DU
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	50		50.0		mg/L		1	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-390268/10
Matrix: Water
Analysis Batch: 390268

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/23/17 19:32	1

Lab Sample ID: LCS 440-390268/11
Matrix: Water
Analysis Batch: 390268

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	5.170		mg/L		103	90 - 110

Lab Sample ID: MRL 440-390268/9
Matrix: Water
Analysis Batch: 390268

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	0.200	0.2050		mg/L		103	10 - 200

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 390268

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	ND		5.00	5.500		mg/L		110	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-177394-1 MSD

Matrix: Water

Analysis Batch: 390268

Client Sample ID: Outfall002_20170218_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.370		mg/L		107	90 - 110	2	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-389129/3

Matrix: Water

Analysis Batch: 389129

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/18/17 21:13	1

Lab Sample ID: LCS 440-389129/4

Matrix: Water

Analysis Batch: 389129

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.260		mg/L		104	90 - 110

Lab Sample ID: 720-77778-B-1 MS

Matrix: Water

Analysis Batch: 389129

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.062	J,DX	0.250	0.286		mg/L		89	50 - 125

Lab Sample ID: 720-77778-B-1 MSD

Matrix: Water

Analysis Batch: 389129

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.062	J,DX	0.250	0.285		mg/L		89	50 - 125	0	20

Lab Sample ID: MB 440-390512/3

Matrix: Water

Analysis Batch: 390512

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/24/17 20:58	1

Lab Sample ID: LCS 440-390512/4

Matrix: Water

Analysis Batch: 390512

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.255		mg/L		102	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: MRL 440-390512/5
Matrix: Water
Analysis Batch: 390512

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.100	0.105		mg/L		105	50 - 150

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 390512

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.067	J,DX BU	0.250	0.260	BU	mg/L		77	50 - 125

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 390512

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.067	J,DX BU	0.250	0.267	BU	mg/L		80	50 - 125	3	20

Lab Sample ID: 440-177902-A-1 DU
Matrix: Water
Analysis Batch: 390512

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Methylene Blue Active Substances	ND		ND		mg/L		NC	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-389203/1
Matrix: Water
Analysis Batch: 389203

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/20/17 06:41	1

Lab Sample ID: LCS 440-389203/4
Matrix: Water
Analysis Batch: 389203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	191		mg/L		96	85 - 115

Lab Sample ID: LCSD 440-389203/5
Matrix: Water
Analysis Batch: 389203

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	194		mg/L		98	85 - 115	2	20

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

GC/MS Semi VOA

Prep Batch: 390550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	625	
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	625	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	625	

Analysis Batch: 390988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	625	390550
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	390550
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	390550
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	625	390550
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	625	390550

GC Semi VOA

Prep Batch: 389220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	608	
MB 440-389220/1-A	Method Blank	Total/NA	Water	608	
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	608	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	608	

Analysis Batch: 389885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	608 Pesticides	389220
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608 Pesticides	389220
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	608 Pesticides	389220
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	608 Pesticides	389220

Analysis Batch: 390125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389220/1-A	Method Blank	Total/NA	Water	608 Pesticides	389220

HPLC/IC

Analysis Batch: 389206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	300.0	
MB 440-389206/3	Method Blank	Total/NA	Water	300.0	
LCS 440-389206/2	Lab Control Sample	Total/NA	Water	300.0	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	300.0	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	300.0	

Analysis Batch: 389508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	300.0	
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	300.0	
MB 440-389508/4	Method Blank	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

HPLC/IC (Continued)

Analysis Batch: 389508 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-389508/2	Lab Control Sample	Total/NA	Water	300.0	
LCSD 440-389508/18	Lab Control Sample Dup	Total/NA	Water	300.0	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	300.0	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	300.0	

Analysis Batch: 389791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	314.0	
MB 440-389791/3	Method Blank	Total/NA	Water	314.0	
LCS 440-389791/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-389791/5	Lab Control Sample	Total/NA	Water	314.0	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	314.0	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	314.0	

Analysis Batch: 391863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	1613B	
440-177394-1 - RA	Outfall002_20170218_Comp	Total/NA	Water	1613B	
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	1613B	152230
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	152230
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	152230
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152230

Analysis Batch: 152915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1 - RA	Outfall002_20170218_Comp	Total/NA	Water	1613B	152230

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Metals (Continued)

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	200.2	389636
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	200.2	389636

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	200.8	390172
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	200.8	390172

Prep Batch: 390886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	245.1	389636
MB 440-390886/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390886/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	245.1	389636
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	245.1	389636

Prep Batch: 390898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	245.1	
MB 440-390898/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390898/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	245.1	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	245.1	

Analysis Batch: 391177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	245.1	390886
MB 440-390886/1-A	Method Blank	Total/NA	Water	245.1	390886
LCS 440-390886/2-A	Lab Control Sample	Total/NA	Water	245.1	390886
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	245.1	390886
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	245.1	390886

Analysis Batch: 391217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	245.1	390898
MB 440-390898/1-A	Method Blank	Total/NA	Water	245.1	390898
LCS 440-390898/2-A	Lab Control Sample	Total/NA	Water	245.1	390898
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	245.1	390898
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	245.1	390898

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Metals (Continued)

Prep Batch: 391410 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1 MS	Outfall002_20170218_Comp	Total Recoverable	Water	200.2	
440-177394-1 MSD	Outfall002_20170218_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-1 MS	Outfall002_20170218_Comp	Total Recoverable	Water	200.8	391410
440-177394-1 MSD	Outfall002_20170218_Comp	Total Recoverable	Water	200.8	391410

General Chemistry

Analysis Batch: 389129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	SM 5540C	
MB 440-389129/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-389129/4	Lab Control Sample	Total/NA	Water	SM 5540C	
720-77778-B-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
720-77778-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	SM5210B	
USB 440-389203/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-389203/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-389203/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 389294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	180.1	
MB 440-389294/5	Method Blank	Total/NA	Water	180.1	
440-177394-1 DU	Outfall002_20170218_Comp	Total/NA	Water	180.1	

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	Distill/CN	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

General Chemistry (Continued)

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177394-1 DU	Outfall002_20170218_Comp	Total/NA	Water	SM 2540C	

Analysis Batch: 390268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-390268/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-390268/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-390268/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	

Analysis Batch: 390386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	SM 2540D	
MB 440-390386/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-390386/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177399-O-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 390512

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-390512/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-390512/4	Lab Control Sample	Total/NA	Water	SM 5540C	
MRL 440-390512/5	Lab Control Sample	Total/NA	Water	SM 5540C	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	SM 5540C	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	SM 5540C	
440-177902-A-1 DU	Duplicate	Total/NA	Water	SM 5540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LG	LG=Surrogate recovery below the acceptance limits

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
BB	Sample > 4X spike concentration
EY	Result exceeds normal dynamic range; reported as a min. est.
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)

1

2

3

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14

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18
The following analytes are included in this report, but certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
608 Pesticides	608	Water	alpha-BHC	
625	625	Water	2,4,6-Trichlorophenol	
625	625	Water	2,4-Dinitrotoluene	
625	625	Water	Bis(2-ethylhexyl) phthalate	
625	625	Water	N-Nitrosodimethylamine	
625	625	Water	Pentachlorophenol	
NO3NO2 Calc		Water	Nitrate Nitrite as N	

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Lab PM: Patel, Urvasi																																																																							
Client Contact: Shipping/Receiving		E-Mail: urvasi.patel@testamericainc.com																																																																							
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California																																																																							
Address: 13715 Rider Trail North,		State of Origin: California																																																																							
City: Earth City		State: California																																																																							
State, Zip: MO, 63045																																																																									
Phone: 314-298-8566(Tel) 314-298-8757(Fax)																																																																									
Email:																																																																									
Project Name: Boeing NPDES SSFL outfalls																																																																									
Site:																																																																									
Due Date Requested: 3/2/2017																																																																									
TAT Requested (days):																																																																									
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<table border="1"> <thead> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=waste/oil, BT=TISSUE, A=Air)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>900.0/Evaporation Gross Alpha/Beta</th> <th>901.1 Cs/Fill_Geo_0 K-40 and Cesium-137</th> <th>903.0/PreSep_21 Radium-226</th> <th>904.0/PreSep_0 Radium-228</th> <th>905.0 Sr90/PreSep_7 Strontium-90</th> <th>906.0/LSC_Dist_Susp Tritium</th> <th>A01R_U/ExChrom_Actin Total Uranium</th> <th>Analysis Requested</th> <th>Preservation Codes:</th> <th>Special Instructions/Note:</th> <th>Total Number of containers</th> </tr> </thead> <tbody> <tr> <td>Outfall002_20170218_Comp (440-177394-1)</td> <td>2/18/17</td> <td>12:00 Pacific</td> <td></td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)</td> <td>Boeing SSFL; DO NOT FILTER; use prep date from preservation</td> <td>2</td> </tr> <tr> <td>Outfall002_20170218_Comp (440-177394-1MS)</td> <td>2/18/17</td> <td>12:00 Pacific</td> <td>MS</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td>Boeing SSFL; DO NOT FILTER; use prep date from preservation</td> <td>2</td> </tr> <tr> <td>Outfall002_20170218_Comp (440-177394-1MSD)</td> <td>2/18/17</td> <td>12:00 Pacific</td> <td>MSD</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td>Boeing SSFL; DO NOT FILTER; use prep date from preservation</td> <td>2</td> </tr> </tbody> </table>			Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=TISSUE, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	900.0/Evaporation Gross Alpha/Beta	901.1 Cs/Fill_Geo_0 K-40 and Cesium-137	903.0/PreSep_21 Radium-226	904.0/PreSep_0 Radium-228	905.0 Sr90/PreSep_7 Strontium-90	906.0/LSC_Dist_Susp Tritium	A01R_U/ExChrom_Actin Total Uranium	Analysis Requested	Preservation Codes:	Special Instructions/Note:	Total Number of containers	Outfall002_20170218_Comp (440-177394-1)	2/18/17	12:00 Pacific		Water	X	X	X	X	X	X	X	X	X	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	Boeing SSFL; DO NOT FILTER; use prep date from preservation	2	Outfall002_20170218_Comp (440-177394-1MS)	2/18/17	12:00 Pacific	MS	Water	X	X	X	X	X	X	X	X	X			Boeing SSFL; DO NOT FILTER; use prep date from preservation	2	Outfall002_20170218_Comp (440-177394-1MSD)	2/18/17	12:00 Pacific	MSD	Water	X	X	X	X	X	X	X	X	X			Boeing SSFL; DO NOT FILTER; use prep date from preservation	2
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=TISSUE, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	900.0/Evaporation Gross Alpha/Beta	901.1 Cs/Fill_Geo_0 K-40 and Cesium-137	903.0/PreSep_21 Radium-226	904.0/PreSep_0 Radium-228	905.0 Sr90/PreSep_7 Strontium-90	906.0/LSC_Dist_Susp Tritium	A01R_U/ExChrom_Actin Total Uranium	Analysis Requested	Preservation Codes:	Special Instructions/Note:	Total Number of containers																																																								
Outfall002_20170218_Comp (440-177394-1)	2/18/17	12:00 Pacific		Water	X	X	X	X	X	X	X	X	X	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	Boeing SSFL; DO NOT FILTER; use prep date from preservation	2																																																									
Outfall002_20170218_Comp (440-177394-1MS)	2/18/17	12:00 Pacific	MS	Water	X	X	X	X	X	X	X	X	X			Boeing SSFL; DO NOT FILTER; use prep date from preservation	2																																																								
Outfall002_20170218_Comp (440-177394-1MSD)	2/18/17	12:00 Pacific	MSD	Water	X	X	X	X	X	X	X	X	X			Boeing SSFL; DO NOT FILTER; use prep date from preservation	2																																																								
<p>Possible Hazard Identification</p> <p>Unconfirmed</p> <p>Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2</p> <p>Empty Kit Relinquished by: Date: Time: Method of Shipment:</p> <p>Relinquished by: <i>Urvasi Patel</i> Date/Time: 2/20/17 12:00 Company: TAI</p> <p>Relinquished by: Date/Time: Company:</p> <p>Relinquished by: Date/Time: Company:</p> <p>Custody Seals Intact: Custody Seal No.: Yes No</p> <p>Cooler Temperature(s) °C and Other Remarks:</p>																																																																									



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Carrier Tracking No(s): 440-107830.1	
Client Contact: Shipping/Receiving		E-Mail: urvashi.patel@testamericainc.com		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-177394-1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 3/2/2017		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		TAT Requested (days):		Analysis Requested:	
Email:		PO #:		Total Number of Containers:	
WO #:		Project #:		Perform MS/MSD (Yes or No):	
Project Name: Boeing NPDES SSFL outfalls		SSOW#:		Field Filtered Sample (Yes or No):	
Site:		Sample Date: 2/18/17		1613B/1613B_Sox_Sep_P Standard List w/ Totals	
Sample Identification - Client ID (Lab ID):		Sample Time: 12:00 Pacific		X	
Outfall002_20170218_Comp (440-177394-1)		Sample Date: 2/18/17		Total Number of Containers: 2	
VRCJ#2 02-27-17		Matrix (W=Water, S=solid, O=water/oil, BT=Tissue, A=Air)		Special Instructions/Note: See OAS, Boeing_wiu to zero, ug/L, Use Boeing glassware.	
Water		Preservation Code:			
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2					
Empty Kit Relinquished by: _____ Date: _____					
Relinquished by: Vu Bawly Date/Time: 2/20/17 17:00 Company: TAA					
Relinquished by: _____ Date/Time: _____ Company: _____					
Relinquished by: _____ Date/Time: _____ Company: _____					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: 1.2					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Special Instructions/QC Requirements:					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177394-1

Login Number: 177394

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177394-1

Login Number: 177394

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:15 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-177394-1	Outfall002_20170218_Comp	58	58	46	52	56	72	66	70
440-177394-1 - RA	Outfall002_20170218_Comp		60						
MB 320-152230/1-A	Method Blank	52	53	39	45	49	58	54	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-177394-1	Outfall002_20170218_Comp	63	58	63	54	62	61	48	70
440-177394-1 - RA	Outfall002_20170218_Comp								
MB 320-152230/1-A	Method Blank	53	49	57	40	48	47	35	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-177394-1	Outfall002_20170218_Comp		63		58		63	54	
440-177394-1 - RA	Outfall002_20170218_Comp								
MB 320-152230/1-A	Method Blank		53		49		57	40	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-177394-1	Outfall002_20170218_Comp		62		61		48
440-177394-1 - RA	Outfall002_20170218_Comp						
MB 320-152230/1-A	Method Blank		48		47		35

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152230/2-A	Lab Control Sample	62	63	48	53	59	75	71	70
LCSD 320-152230/3-A	Lab Control Sample Dup	51	51	40	44	50	62	52	57

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152230/2-A	Lab Control Sample	63	59	66	54	66	63	55
LCSD 320-152230/3-A	Lab Control Sample Dup	53	46	52	41	47	50	38

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177394-2

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 9:13:35 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 9:13:35 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177394-1	Outfall002_20170218_Comp	Water	02/18/17 12:00	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Job ID: 440-177394-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177394-2**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.4° C, 2.1° C, 3.4° C, 4.2° C and 4.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall002_20170218_Comp_Extra (440-177394-2). received #2 not listed on coc.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall002_20170218_Comp (440-177394-1), Outfall002_20170218_Comp (440-177394-1[MS]) and Outfall002_20170218_Comp (440-177394-1[MSD])

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

The following samples were prepped at a reduced aliquot due to sediment.

Outfall002_20170218_Comp (440-177394-1), Outfall002_20170218_Comp (440-177394-1[MS]) and Outfall002_20170218_Comp (440-177394-1[MSD])

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: During the barium clean up portion of the into in-growth process a deviation occurred, whereas, following the addition of 10 milliliters sodium sulfate and m-cresol purple, 5 milliliters of sodium chromate was added before the addition of sodium hydroxide. To correct this mistake, three milliliters of sodium hydroxide was added as well as about 1.5 milliliters of sodium chromate. Barium pellets formed in all samples and were moved into in-growth. Outfall002_20170218_Comp (440-177394-1), Outfall002_20170218_Comp (440-177394-1[MS]) and Outfall002_20170218_Comp (440-177394-1[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	4.56		1.52	1.60	3.00	1.44	pCi/L	03/13/17 10:59	03/19/17 20:24	1
Gross Beta	4.20		0.910	1.00	4.00	1.03	pCi/L	03/13/17 10:59	03/19/17 20:24	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.17	U	7.54	7.55	20.0	13.0	pCi/L	02/23/17 14:59	02/27/17 12:51	1
Potassium-40	-18.6	U	111	111		166	pCi/L	02/23/17 14:59	02/27/17 12:51	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0776	U	0.0815	0.0818	1.00	0.130	pCi/L	02/23/17 09:25	03/17/17 05:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.8		40 - 110					02/23/17 09:25	03/17/17 05:43	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.426		0.272	0.275	1.00	0.422	pCi/L	02/23/17 10:05	03/09/17 11:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.8		40 - 110					02/23/17 10:05	03/09/17 11:23	1
Y Carrier	90.1		40 - 110					02/23/17 10:05	03/09/17 11:23	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.349	U	0.369	0.370	3.00	0.602	pCi/L	03/03/17 14:30	03/13/17 10:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.3		40 - 110					03/03/17 14:30	03/13/17 10:32	1
Y Carrier	99.1		40 - 110					03/03/17 14:30	03/13/17 10:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-31.1	U	164	164	500	307	pCi/L	03/17/17 10:22	03/17/17 17:10	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.574		0.246	0.248	1.00	0.167	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.4		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/13/17 10:59	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:24	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294726	02/27/17 12:51	RTM	TAL SL
Total/NA	Prep	PrecSep-21			1000.01 mL	1.0 g	294225	02/23/17 09:25	PJM	TAL SL
Total/NA	Analysis	903.0		1			298072	03/17/17 05:43	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.01 mL	1.0 g	294240	02/23/17 10:05	PJM	TAL SL
Total/NA	Analysis	904.0		1			296684	03/09/17 11:23	RTM	TAL SL
Total/NA	Prep	PrecSep-7			499.78 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:32	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.1 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 17:10	ALD	TAL SL
Total/NA	Prep	ExtChrom			499.97 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298081	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-1 MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

Lab Sample ID: 440-177394-1 MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294225/1-A
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294225

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04263	U	0.0791	0.0792	1.00	0.140	pCi/L	02/23/17 09:25	03/17/17 05:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110					02/23/17 09:25	03/17/17 05:43	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294225/2-A
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.70		1.14	1.00	0.114	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	94.4		40 - 110							

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0776	U	11.4	10.53		1.12	1.00	0.125	pCi/L	93	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	88.2		40 - 110								

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0776	U	11.4	10.66		1.14	1.00	0.114	pCi/L	94	75 - 138	0.06	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	85.8		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294240/1-A
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294240

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-228	0.4979		0.304	0.307	1.00	0.470	pCi/L	02/23/17 10:05	03/09/17 11:22	1	
Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac					
Ba Carrier	92.6		40 - 110	02/23/17 10:05	03/09/17 11:22	1					
Y Carrier	87.9		40 - 110	02/23/17 10:05	03/09/17 11:22	1					

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-294240/2-A
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	15.31		1.64	1.00	0.440	pCi/L	111	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	94.4		40 - 110						
Y Carrier	88.6		40 - 110						

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.426		13.7	15.90		1.71	1.00	0.420	pCi/L	113	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	88.2		40 - 110								
Y Carrier	87.1		40 - 110								

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.426		13.7	15.82		1.73	1.00	0.520	pCi/L	112	45 - 150	0.03	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	85.8		40 - 110										
Y Carrier	84.5		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110								03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110								03/03/17 14:30	03/13/17 10:31	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	80.3		40 - 110								
Y Carrier	104		40 - 110								

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.2		30 - 110					03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	89.4		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-177394-1 MS

Matrix: Water

Analysis Batch: 298093

Client Sample ID: Outfall002_20170218_Comp

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limits
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146	
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	63.1		30 - 110									

Lab Sample ID: 440-177394-1 MSD

Matrix: Water

Analysis Batch: 298111

Client Sample ID: Outfall002_20170218_Comp

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146		0.83	1
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143		0.71	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	81.8		30 - 110											

Lab Sample ID: 440-178167-M-1-G MS

Matrix: Water

Analysis Batch: 298118

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limits
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146	
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	74.3		30 - 110									

Lab Sample ID: 440-178167-M-1-H MSD

Matrix: Water

Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146		0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143		0.42	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	89.0		30 - 110											

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Rad

Prep Batch: 294225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294225/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294225/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	PrecSep-21	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	PrecSep-21	

Prep Batch: 294240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294240/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294240/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	PrecSep_0	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	PrecSep_0	

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	PrecSep-7	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	ExtChrom	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	Evaporation	
440-177394-1 MSBT	Outfall002_20170218_Comp	Total/NA	Water	Evaporation	
440-177394-1 MSBTD	Outfall002_20170218_Comp	Total/NA	Water	Evaporation	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	Evaporation	

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Rad (Continued)

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-1 MS	Outfall002_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	
440-177394-1 MSD	Outfall002_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177394-2

Login Number: 177394

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177394-2

Login Number: 177394

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/21/17 03:51 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0,19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-177394-1	Outfall002_20170218_Comp	93.8
440-177394-1 MS	Outfall002_20170218_Comp	88.2
440-177394-1 MSD	Outfall002_20170218_Comp	85.8
LCS 160-294225/2-A	Lab Control Sample	94.4
MB 160-294225/1-A	Method Blank	92.6

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-177394-1	Outfall002_20170218_Comp	93.8	90.1
440-177394-1 MS	Outfall002_20170218_Comp	88.2	87.1
440-177394-1 MSD	Outfall002_20170218_Comp	85.8	84.5
LCS 160-294240/2-A	Lab Control Sample	94.4	88.6
MB 160-294240/1-A	Method Blank	92.6	87.9

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-177394-1	Outfall002_20170218_Comp	77.3	99.1
440-177394-1 MS	Outfall002_20170218_Comp	80.3	104
440-177394-1 MSD	Outfall002_20170218_Comp	80.2	97.2
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177394-1	Outfall002_20170218_Comp	87.4
440-177394-1 MS	Outfall002_20170218_Comp	63.1
440-177394-1 MSD	Outfall002_20170218_Comp	81.8

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177394-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 14, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177394-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170218_ Comp	440-177394-1	N/A	Water	2/18/17 12:00 PM	E200.8
Outfall002_20170218_ Comp_F	440-177394-3	N/A	Water	2/18/17 12:00 PM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-177394-4:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklist, custody seals were intact on the coolers.

The following issue was noted:

- Some corrections to the original COC were not initialed or dated



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 14, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, six months for zinc, was met with the following exception. Sample Outfall002_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. The result for dissolved zinc from this sample was qualified as an estimated nondetect (UJ).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for zinc were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with the total zinc analysis; this review is based on summary data for that CRQL.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total zinc analysis; this review is based on summary data for those blanks.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total zinc; this review is based on summary data for that ICSA analysis.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170218_Comp and Outfall002_20170218_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130%



and $\leq 20\%$, respectively.

III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773944

Analysis Method *E200.8*

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	14	20	10	ug/L	J,DX	J	DNQ

Sample Name Outfall002_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177394-4

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/8/2017 8:58:46 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/8/2017 8:58:46 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177394-1	Outfall002_20170218_Comp	Water	02/18/17 12:00	02/18/17 18:40
440-177394-3	Outfall002_20170218_Comp_F	Water	02/18/17 12:00	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Job ID: 440-177394-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177394-4

Comments

200.7 Metals analyzed by 200.8 with 200.7 RLs.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 1.4° C, 2.1° C, 3.4° C, 4.2° C and 4.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall002_20170218_Comp_Extra (440-177394-2). received #2 not listed on coc.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	14	J,DX	20	10	ug/L		03/01/17 15:15	03/03/17 14:47	1

Client Sample ID: Outfall002_20170218_Comp_F

Lab Sample ID: 440-177394-3

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		02/23/17 15:59	02/27/17 14:47	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Client Sample ID: Outfall002_20170218_Comp

Lab Sample ID: 440-177394-1

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:47	IH1	TAL IRV

Client Sample ID: Outfall002_20170218_Comp_F

Lab Sample ID: 440-177394-3

Date Collected: 02/18/17 12:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 14:47	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	74.6		ug/L		93	85 - 115

Lab Sample ID: 440-177394-1 MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	14	J,DX	80.0	89.7		ug/L		95	70 - 130

Lab Sample ID: 440-177394-1 MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Outfall002_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	14	J,DX	80.0	89.3		ug/L		94	70 - 130	0	20

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/23/17 15:59	02/27/17 14:41	1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	76.8		ug/L		96	85 - 115

Lab Sample ID: 440-177394-3 MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall002_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	2.29		80.0	77.3		ug/L		97	70 - 130

Lab Sample ID: 440-177394-3 MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall002_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	2.29		80.0	77.0		ug/L		96	70 - 130	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	200.2	389636
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	200.2	389636

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-3	Outfall002_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177394-3 MS	Outfall002_20170218_Comp_F	Dissolved	Water	200.8	390172
440-177394-3 MSD	Outfall002_20170218_Comp_F	Dissolved	Water	200.8	390172

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-1 MS	Outfall002_20170218_Comp	Total Recoverable	Water	200.2	
440-177394-1 MSD	Outfall002_20170218_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-1	Outfall002_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-1 MS	Outfall002_20170218_Comp	Total Recoverable	Water	200.8	391410
440-177394-1 MSD	Outfall002_20170218_Comp	Total Recoverable	Water	200.8	391410

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-177394-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 002 Comp</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>	
<p>Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.</p>	
<p>Test America & services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</p>		<p>Container Type 1L Poly borosilicate vials 500 mL Poly 2.5 Gel Cube 1L Glass Amber 1-Gel-Cube</p>		<p># of Cont. 3 3 3 3 3 3</p>		<p>MS/MSD Yes Yes Yes Yes Yes No</p>	
<p>Sampler: <i>Das Smith Roy Barkus</i></p>		<p>Sample I.D. Outfall002_20170218_Comp_F Outfall002_20170218_Comp</p>		<p>Sample Matrix WM WM WM WM WM</p>		<p>Sampling Date/Time 2/18/2017/11:00 2/18/2017/11:00</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</p>		<p># of Cont.</p>		<p>MS/MSD</p>	
<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Sampling Date/Time</p>		<p>Sample Matrix</p>	
<p>Sample Description</p>		<p>Outfall 002</p>		<p>Total Dissolved Metals: (E200.7): Zn X (E200.8): Cu, Pb, Cd, Fe</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013) X</p>	
<p>Sample Matrix</p>		<p>Container Type</</p>					

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177394-4

Login Number: 177394

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-178121-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 29, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-178121-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170226_Grab	440-178121-1	N/A	Water	2/26/17 8:20 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-178121-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall002_20170226_Grab. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170226_2 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for target compounds 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.1. QUALITY CONTROL SAMPLES

IV.1.1. METHOD BLANKS

The method blanks had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.1.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.1.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.2. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance or settleable solids analyses; no sample results were qualified.

IV.3. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.3.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.3.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401781211

Analysis Method E120.1

Sample Name Outfall002_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-178121-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	400	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall002_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-178121-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.3	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall002_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-178121-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	0.56	0.50	0.25	ug/L			

Analysis Method SM2540F

Sample Name Outfall002_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-178121-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178121-1

Client Project/Site: Routine Outfall 002 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 10:42:54 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 10:42:54 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178121-1	Outfall002_20170226_Grab	Water	02/26/17 08:20	02/27/17 07:50
440-178121-3	TB_20170226	Water	02/26/17 08:20	02/27/17 07:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Job ID: 440-178121-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-178121-1**

Comments

No additional comments.

Receipt

The samples were received on 2/27/2017 7:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.8° C, 2.0° C and 2.5° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-392669 and analytical batch 440-392721. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Client Sample ID: Outfall002_20170226_Grab

Lab Sample ID: 440-178121-1

Date Collected: 02/26/17 08:20

Matrix: Water

Date Received: 02/27/17 07:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 10:08	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 10:08	1
Trichloroethene	0.56		0.50	0.25	ug/L			03/02/17 10:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Dibromofluoromethane (Surr)</i>	100		76 - 132		03/02/17 10:08	1
<i>4-Bromofluorobenzene (Surr)</i>	104		80 - 120		03/02/17 10:08	1
<i>Toluene-d8 (Surr)</i>	105		80 - 128		03/02/17 10:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		03/08/17 06:54	03/08/17 06:54	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	400		1.0	1.0	umhos/cm			03/02/17 08:49	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/27/17 16:01	1

Client Sample ID: TB_20170226

Lab Sample ID: 440-178121-3

Date Collected: 02/26/17 08:20

Matrix: Water

Date Received: 02/27/17 07:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 16:17	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 16:17	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 16:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>4-Bromofluorobenzene (Surr)</i>	105		80 - 120		03/02/17 16:17	1
<i>Dibromofluoromethane (Surr)</i>	100		76 - 132		03/02/17 16:17	1
<i>Toluene-d8 (Surr)</i>	110		80 - 128		03/02/17 16:17	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Client Sample ID: Outfall002_20170226_Grab

Lab Sample ID: 440-178121-1

Date Collected: 02/26/17 08:20

Matrix: Water

Date Received: 02/27/17 07:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391545	03/02/17 10:08	RM	TAL IRV
Total/NA	Analysis	120.1		1			391564	03/02/17 08:49	XL	TAL IRV
Total/NA	Prep	1664A			935 mL	1000 mL	392669	03/08/17 06:54	L1A	TAL IRV
Total/NA	Analysis	1664A		1			392721	03/08/17 06:54	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	390841	02/27/17 16:01	ST	TAL IRV

Client Sample ID: TB_20170226

Lab Sample ID: 440-178121-3

Date Collected: 02/26/17 08:20

Matrix: Water

Date Received: 02/27/17 07:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391545	03/02/17 16:17	RM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-391545/4
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 09:15	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 09:15	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 09:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	100		76 - 132		03/02/17 09:15	1
4-Bromofluorobenzene (Surr)	108		80 - 120		03/02/17 09:15	1
Toluene-d8 (Surr)	110		80 - 128		03/02/17 09:15	1

Lab Sample ID: LCS 440-391545/5
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	22.1		ug/L		89	70 - 130
1,2-Dichloroethane	25.0	23.8		ug/L		95	57 - 138
Trichloroethene	25.0	24.5		ug/L		98	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	99		76 - 132
4-Bromofluorobenzene (Surr)	102		80 - 120
Toluene-d8 (Surr)	108		80 - 128

Lab Sample ID: 440-178121-1 MS
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Outfall002_20170226_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	23.7		ug/L		95	70 - 130
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146
Trichloroethene	0.56		25.0	26.4		ug/L		103	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	102		76 - 132
Toluene-d8 (Surr)	109		80 - 128

Lab Sample ID: 440-178121-1 MSD
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Outfall002_20170226_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
1,1-Dichloroethene	ND		25.0	23.5		ug/L		94	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	25.4		ug/L		102	56 - 146	1	20
Trichloroethene	0.56		25.0	26.1		ug/L		102	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-178121-1 MSD
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Outfall002_20170226_Grab
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	100		76 - 132
Toluene-d8 (Surr)	108		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-391564/3
Matrix: Water
Analysis Batch: 391564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			03/02/17 08:49	1

Lab Sample ID: LCS 440-391564/4
Matrix: Water
Analysis Batch: 391564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	764		umhos/cm		99	90 - 110

Lab Sample ID: 440-177874-C-2 DU
Matrix: Water
Analysis Batch: 391564

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	3200		3200		umhos/cm		0.9	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-392669/1-A
Matrix: Water
Analysis Batch: 392721

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392669

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		03/08/17 06:54	03/08/17 06:54	1

Lab Sample ID: LCS 440-392669/2-A
Matrix: Water
Analysis Batch: 392721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392669

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.9		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-392669/3-A
Matrix: Water
Analysis Batch: 392721

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392669

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	34.3		mg/L		86	78 - 114	6	11

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

GC/MS VOA

Analysis Batch: 391545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178121-1	Outfall002_20170226_Grab	Total/NA	Water	624	
440-178121-3	TB_20170226	Total/NA	Water	624	
MB 440-391545/4	Method Blank	Total/NA	Water	624	
LCS 440-391545/5	Lab Control Sample	Total/NA	Water	624	
440-178121-1 MS	Outfall002_20170226_Grab	Total/NA	Water	624	
440-178121-1 MSD	Outfall002_20170226_Grab	Total/NA	Water	624	

General Chemistry

Analysis Batch: 390841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178121-1	Outfall002_20170226_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 391564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178121-1	Outfall002_20170226_Grab	Total/NA	Water	120.1	
MB 440-391564/3	Method Blank	Total/NA	Water	120.1	
LCS 440-391564/4	Lab Control Sample	Total/NA	Water	120.1	
440-177874-C-2 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 392669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178121-1	Outfall002_20170226_Grab	Total/NA	Water	1664A	
MB 440-392669/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-392669/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-392669/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 392721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178121-1	Outfall002_20170226_Grab	Total/NA	Water	1664A	392669
MB 440-392669/1-A	Method Blank	Total/NA	Water	1664A	392669
LCS 440-392669/2-A	Lab Control Sample	Total/NA	Water	1664A	392669
LCSD 440-392669/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	392669

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Grab

TestAmerica Job ID: 440-178121-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichloroethane
624		Water	Trichloroethene



440-178121

WDCJOUR

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 002 Grab		ANALYSIS REQUIRED VOCs - only 1,1-DCE, 1,2-DCA, TCE (E624) Oil & Grease (E1604-HEM) Sedable Solids (E160.5 (SM2540F)) Conductivity (SM25108 / E120.1)		Field Readings Field Readings: (Include units) Time of Readings: 08:15 DO 10.841 mg/L pH 7.43 pH unit Temp 76.1 °C/F Field readings QC Checked by: [Signature] Date/Time: 2-26-17/0925		Meter serial #	
Test America Contact: Unvashi Patel 17461 Denan Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.6606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Container Type 1 L Glass Amber 40 mL VOA 1L Poly 500 mL Poly 1 L Glass Amber 40 mL VOA 500 mL Poly 40 mL VOA		# of Cont 2 9 1 1 2 3 1 3		Preservative HCl HCl None None HCl HCl None HCl	
Sample Description Outfall 002 Trip Blanks (E-20170226)		Sample Matrix WM WM WM WM WM WM WVC		Sampling Date/Time 2/26/2017 2/26/2017 2/26/2017		Sample I.D. Outfall002_20170226_Grab_0920 Outfall002_20170226_Grab_Ext_0920 TE-20170226_0920		MS/MSD Bottle # 15 30 70 75 15 30 75 30	
Sampler: Bryan Benson		Test America's services under this COC shall be performed in accordance with the TACs with Barker Services Agreement 2015-16, as amended by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Comments 440-178121 Chain of Custody		Turn-around time (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X 48 Hour: _____ 5 Day: _____ Normal: _____		Sample integrity (Check) Intact: _____ On Ice: _____ Store samples for 6 months. Data Requirements: (Check) No Level I: _____ All Level IV: _____ X	
Relinquished By [Signature] 2/26/17		Date/Time 2/26/17		Company: 75000 FR		Received By [Signature] 2/26/17 12:35		Date/Time 2/26/17 12:35	
Relinquished By [Signature] 2/27/17		Date/Time 2/27/17		Company: 75000 FR		Received By [Signature] 022717 0850		Date/Time 022717 0850	
Relinquished By [Signature]		Date/Time [Signature]		Company: [Signature]		Received By [Signature]		Date/Time [Signature]	

440-178121

Temp 7.5-2.0-1.3-1.8-2.0-2.5 12-85



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178121-1

Login Number: 178121

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-178167-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 13, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MEC^x Project No.:** 1272.003H.01**Sample Delivery Group:** 440-178167-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170227_Comp	440-178167-1	N/A	Water	2/27/17 9:00 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540,
Outfall002_20170227_Comp_F	440-178167-3	N/A	Water	2/27/17 9:00 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-178167-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklist, custody seals were intact on the coolers at TA-Irvine.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.



Reason Code	Organic	Inorganic
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, HxCDF, and TCDF in the method blank were the same peaks comprising the totals in sample



Outfall002_20170227_Comp. The results for totals HpCDD, HxCDF, and TCDF were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total results in the sample included more peaks than the method blank totals. The sample results for totals HxCDD and HpCDF were qualified as estimated (J). Total HxCDD was subsequently qualified as an estimated nondetect (see Compound Quantification and Reported Detection Limits section).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except those results flagged by the laboratory as EMPC values. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was not detected in the initial analysis of the sample, therefore, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). The reported EMPC for isomer 1,2,3,7,8,9-HxCDD was qualified as an estimated nondetect (UJ). The result for total HxCDD consisted only of the isomer qualified as an EMPC; therefore, the result for total HxCDD was also qualified as an estimated nondetect (UJ). Total HpCDF containing an EMPC peak was qualified as estimated (J).



IV. EPA METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 4, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, EPA Methods 200.8 and 245.1 and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for some CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with the analysis of total metals and dissolved selenium; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSAs associated with analysis of total metals and dissolved selenium; this review is based on summary data for those ICSA analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall002_20170227_Comp and Outfall002_20170227_Comp_F for both methods. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. The result for mercury for sample Outfall002_20170227_Comp was negative, with absolute value greater than MDL and below RL, and was reported as nondetect. The MDL was changed by the reviewer to the absolute value of the negative sample result. Nondetects are valid to the MDL.

It should be noted that the nondetect results for calibration and method blanks analyzed on instrument ICPMS6 could not be verified as nondetects in laboratory blanks were not reported in the raw data.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.



V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The target compound was not detected in method blank.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries of alpha BHC and the RPD were within the laboratory control limits of 37-134% and $\leq 35\%$, respectively.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170227_Comp. Recoveries of alpha BHC and the RPD were within the laboratory control limits of 40-120% and $\leq 30\%$, respectively.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.



VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110% and 85-115%, respectively. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170227_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^x reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and applicable $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall002_20170227_Comp. Recoveries and RPDs were within the laboratory control limits.

VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MECX reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MECX *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1 and 300.0, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

VIII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recoveries for ammonia and MBAS



were within the laboratory control limits of 10-200% and 50-150%, respectfully. Analytical balance calibration logs were provided by the laboratory.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs for BOD and total cyanide were $\leq 20\%$ and $\leq 10\%$, respectively.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall002_20170227_Comp for TDS. The RPD was $\leq 5\%$.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall002_20170227_Comp for ammonia, anions, MBAS, and total cyanide. Applicable recoveries and RPDs were within the laboratory control limits.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects between the MDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Reported nondetects are valid to the MDL.

Sulfate in sample Outfall002_20170227_Comp was reported from a 20 \times dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401781671

Analysis Method E1613B

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000018	0.00010	0.00000039	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000076	0.00010	0.00000033	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000073	0.000050	0.00000025	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000015	0.000050	0.00000042	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000050	0.00000038	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000050	0.00000027	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000050	0.00000028	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000050	0.00000023	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000050	0.00000024	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000077	0.000050	0.00000026	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000037	0.000050	0.00000021	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000050	0.00000023	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000050	0.00000028	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000039	0.000050	0.00000021	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000050	0.00000025	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000015	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000023	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000011	0.000050	0.00000031	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000030	0.000050	0.00000042	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000012	0.000050	0.00000024	ug/L	J,DXMB	U	B
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000037	0.000050	0.00000024	ug/L	J,DXMBq	UJ	*III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000050	0.00000023	ug/L	U	U	

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Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000050	0.00000028	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000025	0.000010	0.00000015	ug/L	J,DXMBq	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000023	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	1.2	0.10	0.040	NTU			

Analysis Method E200.8

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.2	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall002_20170227_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	2.0	2.0	0.50	ug/L	QP		
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	U	
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	U	

Analysis Method E245.1**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.11	ug/L	U	U	\$

Sample Name Outfall002_20170227_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	U	

Analysis Method E300**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	11	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	1.0	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.0	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	110	10	5.0	mg/L			

Analysis Method E314.0**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0050	0.0025	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	1.01	0.503	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.03	2.01	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.03	2.01	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	2.01	1.01	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	2.01	1.01	ug/L	U	U	

Analysis Method SM2540C**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	260	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	ND	1.0	0.50	mg/L	U	U	

Analysis Method SM4500-CN-E**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G**Sample Name** Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.5	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	ND	0.10	0.050	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178167-1

Client Project/Site: Routine Outfall 002 Comp

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/28/2017 8:47:07 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/28/2017 8:47:07 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178167-1	Outfall002_20170227_Comp	Water	02/27/17 09:00	02/27/17 17:45
440-178167-3	Outfall002_20170227_Comp_F	Water	02/27/17 09:00	02/27/17 17:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Job ID: 440-178167-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-178167-1

Comments

Zn was analyzed under 200.8 with 200.7 RLs.
Report revised to include sulfate.

Receipt

The samples were received on 2/27/2017 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 0.8° C, 0.9° C, 1.2° C, 1.3° C, 1.5° C, 1.6° C, 1.6° C, 2.1° C, 2.8° C and 3.4° C.

GC/MS Semi VOA

Method(s) 625: The recovery of surrogate 2-fluorobiphenyl failed below the lower acceptance limit for the laboratory control sample (LCS) of preparation batch 440-391393. The recovery of this surrogate has no impact upon the validity of the LCS. The spiked target analytes are used to monitor the efficiency of the LCS for the prep method and they are within acceptance limits. Thus, the sample data is unaffected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-391014 could not be evaluated for accuracy and precision; however, estimated results are reported per client request. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		5.03	2.01	ug/L		03/01/17 14:38	03/05/17 00:04	1
2,4-Dinitrotoluene	ND		5.03	2.01	ug/L		03/01/17 14:38	03/05/17 00:04	1
N-Nitrosodimethylamine	ND		2.01	1.01	ug/L		03/01/17 14:38	03/05/17 00:04	1
Pentachlorophenol	ND		2.01	1.01	ug/L		03/01/17 14:38	03/05/17 00:04	1
2,4,6-Trichlorophenol	ND		1.01	0.503	ug/L		03/01/17 14:38	03/05/17 00:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	70		50 - 120	03/01/17 14:38	03/05/17 00:04	1
2-Fluorophenol	65		30 - 120	03/01/17 14:38	03/05/17 00:04	1
2,4,6-Tribromophenol	73		40 - 120	03/01/17 14:38	03/05/17 00:04	1
Nitrobenzene-d5	67		45 - 120	03/01/17 14:38	03/05/17 00:04	1
Terphenyl-d14	83		37 - 144	03/01/17 14:38	03/05/17 00:04	1
Phenol-d6	62		35 - 120	03/01/17 14:38	03/05/17 00:04	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/28/17 05:30	03/01/17 18:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	63		10 - 150	02/28/17 05:30	03/01/17 18:48	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11		0.50	0.25	mg/L			02/28/17 13:27	1
Nitrate as N	1.0		0.11	0.055	mg/L			02/28/17 13:27	1
Nitrite as N	ND		0.15	0.070	mg/L			02/28/17 13:27	1
Sulfate	110		10	5.0	mg/L			02/28/17 16:46	20

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/28/17 11:13	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.0		0.15	0.070	mg/L			03/10/17 11:03	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
2,3,7,8-TCDF	ND		0.000010	0.0000001	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	0.0000037	J,DX q	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,7,8,9-HxCDF	0.0000077	J,DX MB	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
2,3,4,6,7,8-HxCDF	0.0000039	J,DX MB	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,4,6,7,8-HpCDD	0.0000015	J,DX MB	0.000050	0.0000004	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,4,6,7,8-HpCDF	0.0000073	J,DX MB q	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000003	ug/L		03/08/17 08:13	03/14/17 05:26	1
OCDD	0.0000076	J,DX MB q	0.00010	0.0000003	ug/L		03/08/17 08:13	03/14/17 05:26	1
OCDF	0.0000018	J,DX MB q	0.00010	0.0000003	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total TCDD	ND		0.000010	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total TCDF	0.0000025	J,DX MB q	0.000010	0.0000001	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total PeCDD	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total PeCDF	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total HxCDD	0.0000037	J,DX MB q	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total HxCDF	0.0000012	J,DX MB	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total HpCDD	0.0000030	J,DX MB q	0.000050	0.0000004	ug/L		03/08/17 08:13	03/14/17 05:26	1
Total HpCDF	0.0000011	J,DX MB q	0.000050	0.0000003	ug/L		03/08/17 08:13	03/14/17 05:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	80		25 - 164	03/08/17 08:13	03/14/17 05:26	1
13C-2,3,7,8-TCDF	77		24 - 169	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,7,8-PeCDD	88		25 - 181	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,7,8-PeCDF	78		24 - 185	03/08/17 08:13	03/14/17 05:26	1
13C-2,3,4,7,8-PeCDF	80		21 - 178	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,6,7,8-HxCDD	99		28 - 130	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,6,7,8-HxCDF	84		26 - 123	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147	03/08/17 08:13	03/14/17 05:26	1
13C-2,3,4,6,7,8-HxCDF	83		28 - 136	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,4,6,7,8-HpCDD	85		23 - 140	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,4,6,7,8-HpCDF	86		28 - 143	03/08/17 08:13	03/14/17 05:26	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138	03/08/17 08:13	03/14/17 05:26	1
13C-OCDD	79		17 - 157	03/08/17 08:13	03/14/17 05:26	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	95		35 - 197	03/08/17 08:13	03/14/17 05:26	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/07/17 12:01	03/13/17 15:37	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 12:01	03/13/17 15:37	1
Copper	2.2		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:37	1
Lead	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:37	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:37	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/10/17 15:54	03/11/17 03:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	1.2		0.10	0.040	NTU			02/28/17 17:03	1
Total Dissolved Solids	260		10	5.0	mg/L			03/02/17 09:00	1
Total Suspended Solids	ND		1.0	0.50	mg/L			03/01/17 19:03	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/06/17 14:31	03/07/17 17:28	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/28/17 17:48	1
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/27/17 20:04	1
Biochemical Oxygen Demand	1.5	J,DX	2.0	0.50	mg/L			02/27/17 21:00	1

Client Sample ID: Outfall002_20170227_Comp_F

Lab Sample ID: 440-178167-3

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		03/07/17 15:19	03/09/17 10:30	1
Cadmium	ND	QP	1.0	0.25	ug/L		03/07/17 15:19	03/09/17 10:30	1
Copper	2.0	QP	2.0	0.50	ug/L		03/07/17 15:19	03/09/17 10:30	1
Lead	ND	QP	1.0	0.50	ug/L		03/07/17 15:19	03/09/17 10:30	1
Selenium	ND	QP	2.0	0.50	ug/L		03/07/17 15:19	03/17/17 12:56	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/28/17 22:42	03/01/17 02:18	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			995 mL	2.0 mL	391393	03/01/17 14:38	JC1	TAL IRV
Total/NA	Analysis	625		1			392070	03/05/17 00:04	P1P	TAL IRV
Total/NA	Prep	608			1000 mL	2 mL	390698	02/28/17 05:30	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			391420	03/01/17 18:48	KS	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	391013	02/28/17 13:27	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	391014	02/28/17 13:27	NTN	TAL IRV
Total/NA	Analysis	300.0		20	5 mL	1.0 mL	391014	02/28/17 16:46	NTN	TAL IRV
Total/NA	Analysis	314.0		1			390759	02/28/17 11:13	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			393223	03/10/17 11:03	TLN	TAL IRV
Total/NA	Prep	1613B			990.8 mL	20 uL	153796	03/08/17 08:13	DXD	TAL SAC
Total/NA	Analysis	1613B		1			154963	03/14/17 05:26	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	392459	03/07/17 12:01	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			393721	03/13/17 15:37	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	393350	03/10/17 15:54	DB	TAL IRV
Total/NA	Analysis	245.1		1			393412	03/11/17 03:46	DB	TAL IRV
Total/NA	Analysis	180.1		1			391087	02/28/17 17:03	ST	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	391570	03/02/17 09:00	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	391475	03/01/17 19:03	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	392271	03/06/17 14:31	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			392591	03/07/17 17:28	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	391180	02/28/17 17:48	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	390892	02/27/17 20:04	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			390824	02/27/17 21:00	MMP	TAL IRV

Client Sample ID: Outfall002_20170227_Comp_F

Lab Sample ID: 440-178167-3

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391093	02/28/17 14:54	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	392531	03/07/17 15:19	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			392998	03/09/17 10:30	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391093	02/28/17 14:54	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	392531	03/07/17 15:19	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			394679	03/17/17 12:56	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391093	02/28/17 14:54	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	391202	02/28/17 22:42	DB	TAL IRV
Dissolved	Analysis	245.1		1			391239	03/01/17 02:18	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-391393/1-A

Matrix: Water

Analysis Batch: 392070

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 391393

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
Pentachlorophenol	ND		2.00	1.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		03/01/17 14:38	03/05/17 03:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	63		50 - 120	03/01/17 14:38	03/05/17 03:39	1
2-Fluorophenol	63		30 - 120	03/01/17 14:38	03/05/17 03:39	1
2,4,6-Tribromophenol	74		40 - 120	03/01/17 14:38	03/05/17 03:39	1
Nitrobenzene-d5	65		45 - 120	03/01/17 14:38	03/05/17 03:39	1
Terphenyl-d14	82		37 - 144	03/01/17 14:38	03/05/17 03:39	1
Phenol-d6	57		35 - 120	03/01/17 14:38	03/05/17 03:39	1

Lab Sample ID: LCS 440-391393/2-A

Matrix: Water

Analysis Batch: 392070

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 391393

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	10.0	5.488		ug/L		55	10 - 150
2,4-Dinitrotoluene	10.0	5.918		ug/L		59	39 - 139
N-Nitrosodimethylamine	10.0	4.820		ug/L		48	26 - 117
Pentachlorophenol	20.0	12.34		ug/L		62	14 - 150
2,4,6-Trichlorophenol	10.0	5.224		ug/L		52	37 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	48	LG	50 - 120
2-Fluorophenol	48		30 - 120
2,4,6-Tribromophenol	62		40 - 120
Nitrobenzene-d5	49		45 - 120
Terphenyl-d14	59		37 - 144
Phenol-d6	45		35 - 120

Lab Sample ID: 440-178167-1 MS

Matrix: Water

Analysis Batch: 392070

Client Sample ID: Outfall002_20170227_Comp

Prep Type: Total/NA

Prep Batch: 391393

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	ND		10.1	8.165		ug/L		81	10 - 150
2,4-Dinitrotoluene	ND		10.1	8.883		ug/L		88	39 - 139
N-Nitrosodimethylamine	ND		10.1	7.116		ug/L		70	12 - 123
Pentachlorophenol	ND		20.2	19.69		ug/L		97	14 - 150
2,4,6-Trichlorophenol	ND		10.1	8.186		ug/L		81	37 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	68		50 - 120
2-Fluorophenol	69		30 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 391393

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	92		40 - 120
Nitrobenzene-d5	76		45 - 120
Terphenyl-d14	89		37 - 144
Phenol-d6	67		35 - 120

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 391393

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bis(2-ethylhexyl) phthalate	ND		10.3	8.609		ug/L		84	10 - 150	5	25
2,4-Dinitrotoluene	ND		10.3	8.778		ug/L		85	39 - 139	1	25
N-Nitrosodimethylamine	ND		10.3	6.994		ug/L		68	12 - 123	2	35
Pentachlorophenol	ND		20.6	19.58		ug/L		95	14 - 150	1	25
2,4,6-Trichlorophenol	ND		10.3	8.315		ug/L		81	37 - 144	2	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	68		30 - 120
2,4,6-Tribromophenol	91		40 - 120
Nitrobenzene-d5	75		45 - 120
Terphenyl-d14	91		37 - 144
Phenol-d6	71		35 - 120

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-390698/1-A
Matrix: Water
Analysis Batch: 390902

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390698

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/27/17 06:31	02/28/17 00:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	74		10 - 150	02/27/17 06:31	02/28/17 00:47	1

Lab Sample ID: LCS 440-390698/2-A
Matrix: Water
Analysis Batch: 390902

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390698

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
alpha-BHC	0.200	0.169		ug/L		84	37 - 134

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	69		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCSD 440-390698/3-A
Matrix: Water
Analysis Batch: 390902

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390698

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	0.200	0.178		ug/L		89	37 - 134	5	35
Surrogate	%Recovery	LCSD Qualifier	Limits						
Tetrachloro-m-xylene	73		10 - 150						

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 391420

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 390698

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	ND		0.204	0.164		ug/L		80	40 - 120		
Surrogate	%Recovery	MS Qualifier	Limits								
Tetrachloro-m-xylene	68		10 - 150								

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 391420

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 390698

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	ND		0.196	0.149	PI	ug/L		76	40 - 120	3	30
Surrogate	%Recovery	MSD Qualifier	Limits								
Tetrachloro-m-xylene	60		10 - 150								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-391013/5
Matrix: Water
Analysis Batch: 391013

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/28/17 12:50	1
Nitrite as N	ND		0.15	0.070	mg/L			02/28/17 12:50	1

Lab Sample ID: LCS 440-391013/4
Matrix: Water
Analysis Batch: 391013

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.13	1.04		mg/L		92	90 - 110		
Nitrite as N	1.52	1.54		mg/L		101	90 - 110		
Nitrite as NO2	5.00	5.05		mg/L		101	90 - 110		
Nitrate as NO3	5.00	4.59		mg/L		92	90 - 110		

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 391013

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.0		1.13	1.99		mg/L		88	80 - 120
Nitrite as N	ND		1.52	1.57		mg/L		103	80 - 120
Nitrite as NO2	ND		5.00	5.16		mg/L		103	80 - 120
Nitrate as NO3	4.4		5.00	8.82		mg/L		88	80 - 120

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 391013

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.0		1.13	1.95		mg/L		84	80 - 120	2	20
Nitrite as N	ND		1.52	1.53		mg/L		100	80 - 120	3	20
Nitrite as NO2	ND		5.00	5.03		mg/L		101	80 - 120	3	20
Nitrate as NO3	4.4		5.00	8.62		mg/L		84	80 - 120	2	20

Lab Sample ID: MB 440-391014/5
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/28/17 12:50	1
Sulfate	ND		0.50	0.25	mg/L			02/28/17 12:50	1

Lab Sample ID: LCS 440-391014/4
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.92		mg/L		98	90 - 110
Sulfate	5.00	4.79		mg/L		96	90 - 110

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-390759/64
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/28/17 10:31	1

Lab Sample ID: LCS 440-390759/65
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	23.1		ug/L		92	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-390759/5
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.70	J,DX	ug/L		93	75 - 125

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.9		ug/L		112	80 - 120

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.9		ug/L		112	80 - 120	0	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-153796/1-A
Matrix: Water
Analysis Batch: 154963

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153796

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,7,8-PeCDD	0.000000550	J,DX	0.000050	0.0000003	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,7,8-PeCDF	0.000000579	J,DX	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,4,7,8-HxCDF	0.00000114	J,DX	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,6,7,8-HxCDF	0.000000427	J,DX q	0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,7,8,9-HxCDF	0.00000109	J,DX	0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
2,3,4,6,7,8-HxCDF	0.000000661	J,DX q	0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,4,6,7,8-HpCDD	0.00000127	J,DX	0.000050	0.0000006	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,4,6,7,8-HpCDF	0.00000118	J,DX q	0.000050	0.0000005	ug/L		03/08/17 08:13	03/14/17 03:08	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000008	ug/L		03/08/17 08:13	03/14/17 03:08	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-153796/1-A
Matrix: Water
Analysis Batch: 154963

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153796

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.0000103	J,DX	0.00010	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
OCDF	0.00000259	J,DX	0.00010	0.0000003	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total TCDD	0.00000120	J,DX q	0.000010	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total TCDF	0.00000347	J,DX q	0.000010	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total PeCDD	0.000000799	J,DX q	0.000050	0.0000003	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total PeCDF	0.000000579	J,DX	0.000050	0.0000002	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total HxCDD	0.00000222	J,DX q	0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total HxCDF	0.00000332	J,DX q	0.000050	0.0000001	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total HpCDD	0.00000278	J,DX	0.000050	0.0000006	ug/L		03/08/17 08:13	03/14/17 03:08	1
Total HpCDF	0.00000118	J,DX q	0.000050	0.0000007	ug/L		03/08/17 08:13	03/14/17 03:08	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	76		25 - 164	03/08/17 08:13	03/14/17 03:08	1
13C-2,3,7,8-TCDF	73		24 - 169	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,7,8-PeCDD	78		25 - 181	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,7,8-PeCDF	73		24 - 185	03/08/17 08:13	03/14/17 03:08	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,6,7,8-HxCDD	96		28 - 130	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147	03/08/17 08:13	03/14/17 03:08	1
13C-2,3,4,6,7,8-HxCDF	77		28 - 136	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,4,6,7,8-HpCDD	75		23 - 140	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,4,6,7,8-HpCDF	77		28 - 143	03/08/17 08:13	03/14/17 03:08	1
13C-1,2,3,4,7,8,9-HpCDF	71		26 - 138	03/08/17 08:13	03/14/17 03:08	1
13C-OCDD	70		17 - 157	03/08/17 08:13	03/14/17 03:08	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	03/08/17 08:13	03/14/17 03:08	1

Lab Sample ID: LCS 320-153796/2-A
Matrix: Water
Analysis Batch: 154963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153796

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000195		ug/L		97	67 - 158
2,3,7,8-TCDF	0.000200	0.000195	MB	ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00100	MB	ug/L		100	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00100	MB	ug/L		100	80 - 134

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-153796/2-A
Matrix: Water
Analysis Batch: 154963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153796

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,4,7,8-PeCDF	0.00100	0.00102		ug/L		102	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00106		ug/L		106	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000966		ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00102		ug/L		102	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00103	MB	ug/L		103	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000997	MB	ug/L		100	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00101	MB	ug/L		101	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000997	MB	ug/L		100	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00100	MB	ug/L		100	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00101		ug/L		101	78 - 138
OCDD	0.00200	0.00196	MB	ug/L		98	78 - 144
OCDF	0.00200	0.00190	MB	ug/L		95	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	69		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	63		13 - 328
13C-1,2,3,4,7,8-HxCDD	61		21 - 193
13C-1,2,3,6,7,8-HxCDD	86		25 - 163
13C-1,2,3,4,7,8-HxCDF	60		19 - 202
13C-1,2,3,6,7,8-HxCDF	73		21 - 159
13C-1,2,3,7,8,9-HxCDF	72		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	76		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	72		20 - 186
13C-OCDD	71		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	91		31 - 191

Lab Sample ID: LCSD 320-153796/3-A
Matrix: Water
Analysis Batch: 154963

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153796

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000198		ug/L		99	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000195	MB	ug/L		97	75 - 158	0	50
1,2,3,7,8-PeCDD	0.00100	0.00102	MB	ug/L		102	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00100	MB	ug/L		100	80 - 134	0	50
2,3,4,7,8-PeCDF	0.00100	0.00102		ug/L		102	68 - 160	0	50
1,2,3,4,7,8-HxCDD	0.00100	0.00103		ug/L		103	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134	6	50
1,2,3,7,8,9-HxCDD	0.00100	0.000981		ug/L		98	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	72 - 134	1	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-153796/3-A

Matrix: Water

Analysis Batch: 154963

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 153796

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.000985	MB	ug/L		98	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103	MB	ug/L		103	70 - 156	3	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000980	MB	ug/L		98	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00100	MB	ug/L		100	82 - 122	1	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000975		ug/L		97	78 - 138	3	50
OCDD	0.00200	0.00190	MB	ug/L		95	78 - 144	3	50
OCDF	0.00200	0.00187	MB	ug/L		93	63 - 170	2	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	72		20 - 175
13C-2,3,7,8-TCDF	68		22 - 152
13C-1,2,3,7,8-PeCDD	76		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,6,7,8-HxCDD	83		25 - 163
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDF	73		21 - 159
13C-1,2,3,7,8,9-HxCDF	68		17 - 205
13C-2,3,4,6,7,8-HxCDF	76		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	74		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	70		20 - 186
13C-OCDD	72		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	94		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-153796/1-A

Matrix: Water

Analysis Batch: 155507

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 153796

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000005	ug/L		03/08/17 08:13	03/16/17 14:22	1

Isotope Dilution	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDF - RA	68		24 - 169	03/08/17 08:13	03/16/17 14:22	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD - RA	85		35 - 197	03/08/17 08:13	03/16/17 14:22	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-392459/1-A
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/07/17 12:01	03/13/17 15:34	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 12:01	03/13/17 15:34	1
Copper	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Lead	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1

Lab Sample ID: LCS 440-392459/2-A
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	88.0		ug/L		110	85 - 115
Cadmium	80.0	88.5		ug/L		111	85 - 115
Copper	80.0	88.3		ug/L		110	85 - 115
Lead	80.0	88.9		ug/L		111	85 - 115
Selenium	80.0	90.7		ug/L		113	85 - 115

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	ND		80.0	75.6		ug/L		95	70 - 130
Cadmium	ND		80.0	75.0		ug/L		94	70 - 130
Copper	2.2		80.0	76.9		ug/L		93	70 - 130
Lead	ND		80.0	76.4		ug/L		96	70 - 130
Selenium	ND		80.0	74.6		ug/L		93	70 - 130

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	ND		80.0	76.2		ug/L		95	70 - 130	1	20
Cadmium	ND		80.0	74.6		ug/L		93	70 - 130	0	20
Copper	2.2		80.0	76.8		ug/L		93	70 - 130	0	20
Lead	ND		80.0	77.0		ug/L		96	70 - 130	1	20
Selenium	ND		80.0	75.3		ug/L		94	70 - 130	1	20

Lab Sample ID: MB 440-391093/1-E
Matrix: Water
Analysis Batch: 392998

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 392531

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/07/17 15:19	03/09/17 10:25	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 15:19	03/09/17 10:25	1
Copper	ND		2.0	0.50	ug/L		03/07/17 15:19	03/09/17 10:25	1
Lead	ND		1.0	0.50	ug/L		03/07/17 15:19	03/09/17 10:25	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 15:19	03/09/17 10:25	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Lab Sample ID: LCS 440-391093/2-E
Matrix: Water
Analysis Batch: 392998

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 392531

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	73.2		ug/L		91	85 - 115
Cadmium	80.0	73.7		ug/L		92	85 - 115
Copper	80.0	72.2		ug/L		90	85 - 115
Lead	80.0	74.2		ug/L		93	85 - 115
Selenium	80.0	71.6		ug/L		89	85 - 115

Lab Sample ID: 440-178167-3 MS
Matrix: Water
Analysis Batch: 392998

Client Sample ID: Outfall002_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 392531

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	ND	QP	80.0	72.7		ug/L		91	70 - 130
Cadmium	ND	QP	80.0	72.7		ug/L		91	70 - 130
Copper	2.0	QP	80.0	70.6		ug/L		86	70 - 130
Lead	ND	QP	80.0	70.5		ug/L		88	70 - 130
Selenium	0.73	J,DX QP	80.0	70.9		ug/L		88	70 - 130

Lab Sample ID: 440-178167-3 MSD
Matrix: Water
Analysis Batch: 392998

Client Sample ID: Outfall002_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 392531

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	ND	QP	80.0	74.7		ug/L		93	70 - 130	3	20
Cadmium	ND	QP	80.0	75.7		ug/L		95	70 - 130	4	20
Copper	2.0	QP	80.0	74.7		ug/L		91	70 - 130	6	20
Lead	ND	QP	80.0	74.8		ug/L		93	70 - 130	6	20
Selenium	0.73	J,DX QP	80.0	73.9		ug/L		91	70 - 130	4	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-393350/1-A
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393350

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/10/17 15:54	03/11/17 03:41	1

Lab Sample ID: LCS 440-393350/2-A
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 393350

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.74		ug/L		97	85 - 115

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 393350

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	7.85		ug/L		98	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 393350

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.84		ug/L		98	70 - 130	0	20

Lab Sample ID: MB 440-391093/1-C
Matrix: Water
Analysis Batch: 391239

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 391202

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/28/17 22:42	03/01/17 02:13	1

Lab Sample ID: LCS 440-391093/2-C
Matrix: Water
Analysis Batch: 391239

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391202

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.97		ug/L		100	85 - 115

Lab Sample ID: 440-178167-3 MS
Matrix: Water
Analysis Batch: 391239

Client Sample ID: Outfall002_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 391202

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.67		ug/L		96	70 - 130

Lab Sample ID: 440-178167-3 MSD
Matrix: Water
Analysis Batch: 391239

Client Sample ID: Outfall002_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 391202

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	7.70		ug/L		96	70 - 130	0	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-391087/5
Matrix: Water
Analysis Batch: 391087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/28/17 17:03	1

Lab Sample ID: 440-178180-J-1 DU
Matrix: Water
Analysis Batch: 391087

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	1.1		1.12		NTU		2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-391570/1
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			03/02/17 09:00	1

Lab Sample ID: LCS 440-391570/2
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	964		mg/L		96	90 - 110

Lab Sample ID: 440-178167-1 DU
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	260		251		mg/L		2	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-391475/1
Matrix: Water
Analysis Batch: 391475

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/01/17 19:03	1

Lab Sample ID: LCS 440-391475/2
Matrix: Water
Analysis Batch: 391475

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	981		mg/L		98	85 - 115

Lab Sample ID: 440-177987-B-1 DU
Matrix: Water
Analysis Batch: 391475

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	27		26.5		mg/L		2	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-392271/1-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392271

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/06/17 14:31	03/07/17 17:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCS 440-392271/2-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	92.0		ug/L		92	90 - 110

Lab Sample ID: LCSD 440-392271/3-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Cyanide, Total	100	95.7		ug/L		96	90 - 110	4	10

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	103		ug/L		103	70 - 115

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Cyanide, Total	ND		100	101		ug/L		101	70 - 115	3	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-391180/10
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/28/17 17:27	1

Lab Sample ID: LCS 440-391180/11
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.100		mg/L		102	90 - 110

Lab Sample ID: MRL 440-391180/9
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2590		mg/L		130	10 - 200

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.410		mg/L		108	90 - 110

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.320		mg/L		106	90 - 110	2	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-390892/3
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/27/17 20:03	1

Lab Sample ID: LCS 440-390892/4
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.252		mg/L		101	90 - 110

Lab Sample ID: MRL 440-390892/5
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.100	0.124		mg/L		124	50 - 150

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	ND		0.250	0.237		mg/L		95	50 - 125

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	ND		0.250	0.274		mg/L		110	50 - 125	14	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-390824/1
 Matrix: Water
 Analysis Batch: 390824

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/27/17 14:30	1

Lab Sample ID: LCS 440-390824/4
 Matrix: Water
 Analysis Batch: 390824

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	192		mg/L		96	85 - 115

Lab Sample ID: LCSD 440-390824/5
 Matrix: Water
 Analysis Batch: 390824

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	193		mg/L		97	85 - 115	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

GC/MS Semi VOA

Prep Batch: 391393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	625	
MB 440-391393/1-A	Method Blank	Total/NA	Water	625	
LCS 440-391393/2-A	Lab Control Sample	Total/NA	Water	625	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	625	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	625	

Analysis Batch: 392070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	625	391393
MB 440-391393/1-A	Method Blank	Total/NA	Water	625	391393
LCS 440-391393/2-A	Lab Control Sample	Total/NA	Water	625	391393
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	625	391393
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	625	391393

GC Semi VOA

Prep Batch: 390698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	608	
MB 440-390698/1-A	Method Blank	Total/NA	Water	608	
LCS 440-390698/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-390698/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	608	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	608	

Analysis Batch: 390902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-390698/1-A	Method Blank	Total/NA	Water	608 Pesticides	390698
LCS 440-390698/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	390698
LCS 440-390698/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	390698

Analysis Batch: 391420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	608 Pesticides	390698
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	608 Pesticides	390698
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	608 Pesticides	390698

HPLC/IC

Analysis Batch: 390759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	314.0	
MB 440-390759/64	Method Blank	Total/NA	Water	314.0	
LCS 440-390759/65	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-390759/5	Lab Control Sample	Total/NA	Water	314.0	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	314.0	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	314.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

HPLC/IC (Continued)

Analysis Batch: 391013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	300.0	
MB 440-391013/5	Method Blank	Total/NA	Water	300.0	
LCS 440-391013/4	Lab Control Sample	Total/NA	Water	300.0	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	300.0	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	300.0	

Analysis Batch: 391014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	300.0	
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	300.0	
MB 440-391014/5	Method Blank	Total/NA	Water	300.0	
LCS 440-391014/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 393223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 153796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	1613B	
MB 320-153796/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-153796/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-153796/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-153796/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 154963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	1613B	153796
MB 320-153796/1-A	Method Blank	Total/NA	Water	1613B	153796
LCS 320-153796/2-A	Lab Control Sample	Total/NA	Water	1613B	153796
LCSD 320-153796/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	153796

Analysis Batch: 155507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-153796/1-A - RA	Method Blank	Total/NA	Water	1613B	153796

Metals

Filtration Batch: 391093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-3	Outfall002_20170227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-391093/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-391093/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-391093/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-391093/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-178167-3 MS	Outfall002_20170227_Comp_F	Dissolved	Water	FILTRATION	
440-178167-3 MSD	Outfall002_20170227_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Metals (Continued)

Prep Batch: 391202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-3	Outfall002_20170227_Comp_F	Dissolved	Water	245.1	391093
MB 440-391093/1-C	Method Blank	Dissolved	Water	245.1	391093
LCS 440-391093/2-C	Lab Control Sample	Dissolved	Water	245.1	391093
440-178167-3 MS	Outfall002_20170227_Comp_F	Dissolved	Water	245.1	391093
440-178167-3 MSD	Outfall002_20170227_Comp_F	Dissolved	Water	245.1	391093

Analysis Batch: 391239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-3	Outfall002_20170227_Comp_F	Dissolved	Water	245.1	391202
MB 440-391093/1-C	Method Blank	Dissolved	Water	245.1	391202
LCS 440-391093/2-C	Lab Control Sample	Dissolved	Water	245.1	391202
440-178167-3 MS	Outfall002_20170227_Comp_F	Dissolved	Water	245.1	391202
440-178167-3 MSD	Outfall002_20170227_Comp_F	Dissolved	Water	245.1	391202

Prep Batch: 392459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total Recoverable	Water	200.2	
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-178167-1 MS	Outfall002_20170227_Comp	Total Recoverable	Water	200.2	
440-178167-1 MSD	Outfall002_20170227_Comp	Total Recoverable	Water	200.2	

Prep Batch: 392531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-3	Outfall002_20170227_Comp_F	Dissolved	Water	200.2	391093
MB 440-391093/1-E	Method Blank	Dissolved	Water	200.2	391093
LCS 440-391093/2-E	Lab Control Sample	Dissolved	Water	200.2	391093
440-178167-3 MS	Outfall002_20170227_Comp_F	Dissolved	Water	200.2	391093
440-178167-3 MSD	Outfall002_20170227_Comp_F	Dissolved	Water	200.2	391093

Analysis Batch: 392998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-3	Outfall002_20170227_Comp_F	Dissolved	Water	200.8	392531
MB 440-391093/1-E	Method Blank	Dissolved	Water	200.8	392531
LCS 440-391093/2-E	Lab Control Sample	Dissolved	Water	200.8	392531
440-178167-3 MS	Outfall002_20170227_Comp_F	Dissolved	Water	200.8	392531
440-178167-3 MSD	Outfall002_20170227_Comp_F	Dissolved	Water	200.8	392531

Prep Batch: 393350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	245.1	
MB 440-393350/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-393350/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	245.1	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	245.1	

Analysis Batch: 393412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	245.1	393350
MB 440-393350/1-A	Method Blank	Total/NA	Water	245.1	393350
LCS 440-393350/2-A	Lab Control Sample	Total/NA	Water	245.1	393350

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Metals (Continued)

Analysis Batch: 393412 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	245.1	393350
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	245.1	393350

Analysis Batch: 393721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total Recoverable	Water	200.8	392459
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.8	392459
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.8	392459
440-178167-1 MS	Outfall002_20170227_Comp	Total Recoverable	Water	200.8	392459
440-178167-1 MSD	Outfall002_20170227_Comp	Total Recoverable	Water	200.8	392459

Analysis Batch: 394679

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-3	Outfall002_20170227_Comp_F	Dissolved	Water	200.8	392531

General Chemistry

Analysis Batch: 390824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	SM5210B	
USB 440-390824/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-390824/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCS 440-390824/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 390892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	SM 5540C	
MB 440-390892/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-390892/4	Lab Control Sample	Total/NA	Water	SM 5540C	
MRL 440-390892/5	Lab Control Sample	Total/NA	Water	SM 5540C	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	SM 5540C	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	SM 5540C	

Analysis Batch: 391087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	180.1	
MB 440-391087/5	Method Blank	Total/NA	Water	180.1	
440-178180-J-1 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 391180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-391180/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-391180/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-391180/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	SM 4500 NH3 G	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	SM 4500 NH3 G	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

General Chemistry (Continued)

Analysis Batch: 391475

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	SM 2540D	
MB 440-391475/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-391475/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177987-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 391570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	SM 2540C	
MB 440-391570/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-391570/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-178167-1 DU	Outfall002_20170227_Comp	Total/NA	Water	SM 2540C	

Prep Batch: 392271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	Distill/CN	
MB 440-392271/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-392271/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-392271/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	Distill/CN	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	Distill/CN	

Analysis Batch: 392591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	SM 4500 CN E	392271
MB 440-392271/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	392271
LCS 440-392271/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	392271
LCSD 440-392271/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	392271
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	SM 4500 CN E	392271
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	SM 4500 CN E	392271

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
LG	LG=Surrogate recovery below the acceptance limits

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18
The following analytes are included in this report, but certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
608 Pesticides	608	Water	alpha-BHC	
625	625	Water	2,4,6-Trichlorophenol	
625	625	Water	2,4-Dinitrotoluene	
625	625	Water	Bis(2-ethylhexyl) phthalate	
625	625	Water	N-Nitrosodimethylamine	
625	625	Water	Pentachlorophenol	
NO3NO2 Calc		Water	Nitrate Nitrite as N	

Laboratory: TestAmerica Sacramento


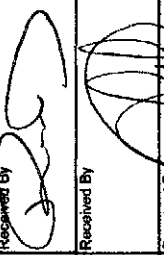
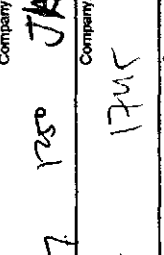
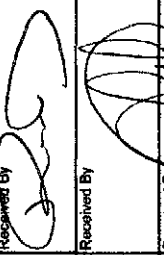
All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17 *
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17 *
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

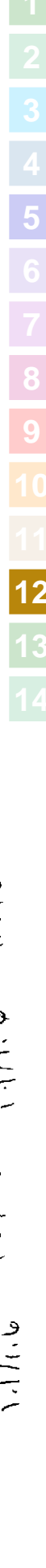
* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM


Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 002 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.8944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED					
Test America Contact: Unvashi Patel 17461 Derran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E905.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate BAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year					
Sample Description Outfall 002	Sample I.D. Outfall002_20170227_Comp_F	Sample Matrix WM	Sampling Date/Time 2/27/2017 / 0700	Container Type 1L Poly	# of Cont. 3	Preservative None	Bottle # 200	MS/MSD Yes	Total Dissolved Metals: (E200.8): Zn X	Total Dissolved Metals: Mercury (E245.1) X	Comments
				borosilicate vials	3	None	320	Yes			
				500 mL Poly	3	NaOH	220	Yes			
				2.5 Gal Cube	3	None	225	Yes			
				1 L Glass Amber	3	None	230	Yes			
				1 Gal Amber	3	None	235	No			

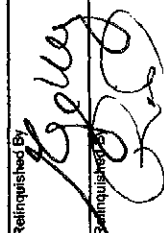
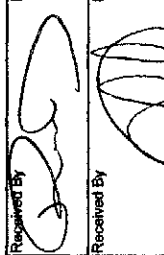
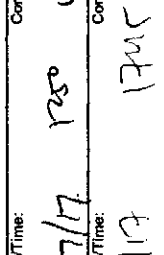
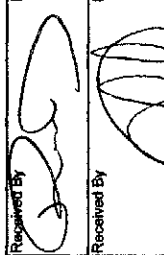
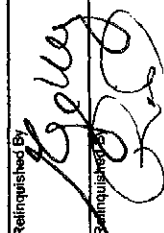
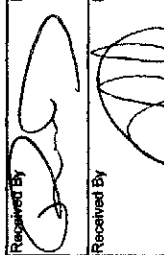
Relinquished By:  Date/Time: 2/27/17 1750	Company: JAHX	Received By:  Date/Time: 2/27/17 1750	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By:  Date/Time: 2/27/17 1715	Company: JAHX	Received By:  Date/Time: 2/27/17 1745	Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months.
Relinquished By: Date/Time: _____	Company: _____	Received By: Date/Time: _____	Data Requirements: (Check) No Level IV: _____ All Level IV: _____ X

W 0.4/0.9 2.9/3.4 0.7/1.2 2.3/2.8
 M 0.8/1.3 1.0/1.5 0.3/0.8 1.6/2.1
 1.1/1.6 1.3/1.6 1.6/2.1
 1255



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 002 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.950.7312, 818.599.0702 (cell)</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>	
<p>Test America Contact: Urvashi Patel 17461 Denison Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p><small>TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</small></p>		<p>Sample I.D.</p>		<p>Sample Matrix</p>		<p>Container Type</p>	
<p>Sampler: Bryce-Benson </p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>1L Poly</p>		<p>(E200.7): Zn (E200.8): Cu, Pb, Cd, Se</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>borosilicate vials</p>		<p>Cyanide (SM4500-CN-E / E335.2)</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>500 mL Poly</p>		<p>Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0, K-40, Cs-137 (E901.0 or E901.1)</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>2.5 Gal Cube</p>		<p>Chronic Toxicity - Selenium (EPA-821-R-02-013)</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>1L Glass Amber</p>		<p>Total Dissolved Metals: Mercury (E245.1)</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>1 Gal Cube</p>		<p>Filter and preserve w/in 24hrs of receipt at lab</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>None</p>		<p>Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>None</p>		<p>Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MSMSD.</p>	
<p>Outfall 002</p>		<p>2/27/2017/0900</p>		<p>WM</p>		<p>None</p>		<p>Only test if first or second rain events of the year</p>	

<p>Relinquished By:  Date/Time: 2/27/17 17:50</p>	<p>Company: JAH</p>	<p>Received By:  Date/Time: 2/27/17 17:50</p>	<p>Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X 48 Hour: ___ 5 Day: ___ Normal: ___</p>
<p>Relinquished By:  Date/Time: 2/27/17 17:50</p>	<p>Company: JAH</p>	<p>Received By:  Date/Time: 2/27/17 17:50</p>	<p>Sample Integrity: (Check) Intact: ___ On Ice: ___ Store samples for 6 months. Data Requirements: (Check) No Level IV: ___ All Level IV: ___ X</p>
<p>Relinquished By:  Date/Time: 2/27/17 17:50</p>	<p>Company: JAH</p>	<p>Received By:  Date/Time: 2/27/17 17:50</p>	<p>Store samples for 6 months. Data Requirements: (Check) No Level IV: ___ All Level IV: ___ X</p>

W 0.4/0.9 2.9/3.4 0.7/1.2 2.3/2.8
 M 0.8/1.3 1.0/1.5 0.3/0.8 1.6/2.1
 1.1/1.6 1.7/1.6 1.8/5



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Lab ID: 440-108188.1	
Client Contact: urvaashi.patel@testamericainc.com		E-Mail: urvaashi.patel@testamericainc.com		Carrier Tracking No(s):	
Shipping/Receiving Company: TestAmerica Laboratories, Inc.		Address: 880 Riverside Parkway, West Sacramento, CA, 95605		State of Origin: California	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Job #: 440-178167-1	
City: West Sacramento		State: CA		Page: Page 1 of 1	
State: CA		Zip: 95605		Accreditations Required (See note): State Program - California	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Email:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Site: S50VW		Due Date Requested: 3/9/2017		Total Number of containers:	
TAT Requestee (days):		Field Filtered Sample (Yes or No):		Special Instructions/Note:	
PO #:		Perform MS/MSD (Yes or No):		See OAS, Boeing_wlu to zero, ug/L, Use Boeing glassware.	
WO #:		1613B/1613B_5ox_Sep_P Standard List w/ Totals		See OAS, Boeing_wlu to zero, ug/L, Use Boeing glassware.	
Sample Date		Sample Time		Sample Type (C=comp, G=grab)	
2/27/17		09:00 Pacific		Water	
2/27/17		09:00 Pacific		Water	
Sample Date		Sample Time		Sample Type (C=comp, G=grab)	
Matrix (In-water, In-soil, On-surface, On-sediment, ST-Tissue, AA&P)		Preservation Code		Matrix	
Water		Water		Water	
Water		Water		Water	

Sample Identification - Client ID (Lab ID)

Outfall002_20170227_Comp (440-178167-1)

Outfall002_20170227_Comp_Extra (440-178167-2)

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/testing/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody Record to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____ Time: _____

Relinquished by: *YUB* Date: *2/28/17* Time: *12:00* Company: *TAI*

Relinquished by: _____ Date: _____ Time: _____ Company: _____

Relinquished by: _____ Date: _____ Time: _____ Company: _____

Custody Seal Intact: Yes No Custody Seal No.: _____

Special Instructions/OC Requirements: _____

Return To Client Disposal By Lab Archive For _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Received by: *[Signature]* Date/Time: *3-1-17 9:30* Company: *[Signature]*

Received by: _____ Date/Time: _____ Company: _____

Received by: _____ Date/Time: _____ Company: _____

Cooler Temperature(s) °C and Other Remarks: *1.4*



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178167-1

Login Number: 178167

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178167-1

Login Number: 178167

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 03/03/17 08:32 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-178167-1	Outfall002_20170227_Comp		80		77		88		78
MB 320-153796/1-A	Method Blank		76		73		78		73
MB 320-153796/1-A - RA	Method Blank				68				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-178167-1	Outfall002_20170227_Comp		80		78		99		76
MB 320-153796/1-A	Method Blank		74		69		96		68
MB 320-153796/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-178167-1	Outfall002_20170227_Comp		84		77		83	85	
MB 320-153796/1-A	Method Blank		77		69		77	75	
MB 320-153796/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)		
440-178167-1	Outfall002_20170227_Comp		86		80		79		
MB 320-153796/1-A	Method Blank		77		71		70		
MB 320-153796/1-A - RA	Method Blank								

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-153796/2-A	Lab Control Sample	74	69	77	70	63	61	86	60
LCSD 320-153796/3-A	Lab Control Sample Dup	72	68	76	70	73	68	83	66

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-153796/2-A	Lab Control Sample	73	72	78	76	71	72	71
LCSD 320-153796/3-A	Lab Control Sample Dup	73	68	76	74	74	70	72

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178167-2

Client Project/Site: Routine Outfall 002 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/28/2017 9:25:09 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/28/2017 9:25:10 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178167-1	Outfall002_20170227_Comp	Water	02/27/17 09:00	02/27/17 17:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Job ID: 440-178167-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-178167-2

Comments

No additional comments.

Receipt

The samples were received on 2/27/2017 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 0.8° C, 0.9° C, 1.2° C, 1.3° C, 1.5° C, 1.6° C, 1.6° C, 2.1° C, 2.8° C and 3.4° C.

RAD

Method(s) 900.0: Gross alpha/beta Batch 298029:

The gross alpha matrix spike (MS) recovery associated with the following samples was outside control limits of 60-140% (56%): Outfall002_20170227_Comp (440-178167-1), Outfall002_20170227_Comp (440-178167-1[MS]), Outfall002_20170227_Comp (440-178167-1[MSD]), (440-178167-R-1-J MSB) and (440-178167-R-1-K MSB). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.506	U	0.870	0.871	3.00	1.53	pCi/L	03/16/17 14:36	03/23/17 05:35	1
Gross Beta	1.73		0.694	0.715	4.00	0.967	pCi/L	03/16/17 14:36	03/23/17 05:35	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.42	U	7.97	7.98	20.0	10.9	pCi/L	03/03/17 02:43	03/03/17 09:13	1
Potassium-40	-82.2	U	154	154		238	pCi/L	03/03/17 02:43	03/03/17 09:13	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.167		0.0842	0.0856	1.00	0.0979	pCi/L	03/03/17 13:14	03/27/17 07:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					03/03/17 13:14	03/27/17 07:30	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.205	U	0.240	0.241	1.00	0.460	pCi/L	03/03/17 14:10	03/17/17 14:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					03/03/17 14:10	03/17/17 14:42	1
Y Carrier	85.6		40 - 110					03/03/17 14:10	03/17/17 14:42	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0502	U	0.178	0.178	3.00	0.323	pCi/L	03/03/17 14:30	03/13/17 10:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.6		40 - 110					03/03/17 14:30	03/13/17 10:35	1
Y Carrier	101		40 - 110					03/03/17 14:30	03/13/17 10:35	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-90.1	U	179	179	500	333	pCi/L	03/21/17 12:50	03/21/17 19:20	1

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.294		0.196	0.197	1.00	0.188	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	89.2		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Client Sample ID: Outfall002_20170227_Comp

Lab Sample ID: 440-178167-1

Date Collected: 02/27/17 09:00

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	298029	03/16/17 14:36	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	299254	03/23/17 05:35	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	295719	03/03/17 02:43	CMT	TAL SL
Total/NA	Analysis	901.1		1			295913	03/03/17 09:13	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.40 mL	1.0 g	295953	03/03/17 13:14	BME	TAL SL
Total/NA	Analysis	903.0		1			300092	03/27/17 07:30	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.40 mL	1.0 g	295966	03/03/17 14:10	BME	TAL SL
Total/NA	Analysis	904.0		1			298074	03/17/17 14:42	MLK	TAL SL
Total/NA	Prep	PrecSep-7			1000.52 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297321	03/13/17 10:35	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	298834	03/21/17 12:50	JDL	TAL SL
Total/NA	Analysis	906.0		1			299020	03/21/17 19:20	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.50 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298117	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-298029/1-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298029

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.475		0.692	0.712	3.00	0.852	pCi/L	03/16/17 14:36	03/23/17 05:34	1
Gross Beta	0.5347	U	0.548	0.551	4.00	0.857	pCi/L	03/16/17 14:36	03/23/17 05:34	1

Lab Sample ID: LCS 160-298029/2-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.97		6.23	3.00	1.84	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-298029/3-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	90.9	90.32		9.56	4.00	0.870	pCi/L	99	75 - 125

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.506	U	49.9	28.11	F1	5.02	3.00	1.85	pCi/L	56	60 - 140

Lab Sample ID: 440-178167-1 MSBT
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	1.73		90.9	93.27		9.87	4.00	1.07	pCi/L	101	60 - 140

Lab Sample ID: 440-178167-1 MSBTD
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Beta	1.73		90.9	90.86		9.63	4.00	0.933	pCi/L	98	60 - 140	0.17	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	0.506	U	49.9	30.52		5.00	3.00	1.46	pCi/L	61	60 - 140	0.16	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-295719/1-A
Matrix: Water
Analysis Batch: 295909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295719

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.148	U	7.04	7.04	20.0	8.78	pCi/L	03/03/17 02:43	03/03/17 09:13	1
Potassium-40	-2.680	U	127	127		168	pCi/L	03/03/17 02:43	03/03/17 09:13	1

Lab Sample ID: LCS 160-295719/2-A
Matrix: Water
Analysis Batch: 295917

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295719

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132200		15300		434	pCi/L	97	90 - 111
Cesium-137	47000	46340		4650	20.0	139	pCi/L	99	90 - 111
Cobalt-60	39600	38420		3800		80.3	pCi/L	97	89 - 110

Lab Sample ID: 440-178167-1 DU
Matrix: Water
Analysis Batch: 295917

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295719

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	2.42	U	-3.585	U	12.8	20.0	15.8	pCi/L	0.29	1
Potassium-40	-82.2	U	54.06	U	96.1		158	pCi/L	0.54	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-295953/1-A
Matrix: Water
Analysis Batch: 300092

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295953

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02758	U	0.0542	0.0542	1.00	0.0978	pCi/L	03/03/17 13:14	03/27/17 07:29	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					03/03/17 13:14	03/27/17 07:29	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-295953/2-A
Matrix: Water
Analysis Batch: 300092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	11.01		1.14	1.00	0.102	pCi/L	97	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	87.9		40 - 110							

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 300093

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.167		11.4	12.29		1.27	1.00	0.110	pCi/L	107	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	90.3		40 - 110								

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 300093

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.167		11.4	12.36		1.28	1.00	0.116	pCi/L	107	75 - 138	0.03	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	90.6		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-295966/1-A
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295966

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1442	U	0.239	0.239	1.00	0.404	pCi/L	03/03/17 14:10	03/17/17 14:41	1
Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	86.7		40 - 110	03/03/17 14:10	03/17/17 14:41	1				
Y Carrier	87.9		40 - 110	03/03/17 14:10	03/17/17 14:41	1				

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-295966/2-A
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	15.19		1.63	1.00	0.390	pCi/L	111	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	87.9		40 - 110						
Y Carrier	86.4		40 - 110						

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.205	U	13.7	15.81		1.69	1.00	0.441	pCi/L	115	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	90.3		40 - 110								
Y Carrier	86.0		40 - 110								

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.205	U	13.7	16.18		1.73	1.00	0.410	pCi/L	118	45 - 150	0.11	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	90.6		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110								03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110								03/03/17 14:30	03/13/17 10:31	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 297321

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0502	U	8.49	8.236		0.866	3.00	0.320	pCi/L	97	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	82.1		40 - 110								
Y Carrier	100		40 - 110								

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 297321

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0502	U	8.49	8.112		0.850	3.00	0.312	pCi/L	96	19 - 150	0.07	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.6		40 - 110										
Y Carrier	105		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298834/1-A
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298834

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-205.9	U	168	169	500	336	pCi/L	03/21/17 12:50	03/21/17 18:35	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-298834/2-A
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2901		447	500	340	pCi/L	99	74 - 114

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-90.1	U	2930	3090		461	500	333	pCi/L	105	67 - 130

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-90.1	U	2940	2365		397	500	333	pCi/L	81	67 - 130	0.85	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.2		30 - 110					03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	89.4		30 - 110						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146	0.83	1	
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1	
		<i>MSD MSD</i>												
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>											
Uranium-232	81.8		30 - 110											

Lab Sample ID: 440-178167-1 MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146			
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143			
		<i>MS MS</i>												
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>											
Uranium-232	74.3		30 - 110											

Lab Sample ID: 440-178167-1 MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Outfall002_20170227_Comp
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1	
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1	
		<i>MSD MSD</i>												
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>											
Uranium-232	89.0		30 - 110											

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Rad

Prep Batch: 295719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-295719/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-295719/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-178167-1 DU	Outfall002_20170227_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 295953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	PrecSep-21	
MB 160-295953/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-295953/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	PrecSep-21	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	PrecSep-21	

Prep Batch: 295966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	PrecSep_0	
MB 160-295966/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-295966/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	PrecSep_0	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	PrecSep-7	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	ExtChrom	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	ExtChrom	

Prep Batch: 298029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	Evaporation	
MB 160-298029/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-298029/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-298029/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	Evaporation	
440-178167-1 MSBT	Outfall002_20170227_Comp	Total/NA	Water	Evaporation	
440-178167-1 MSBTD	Outfall002_20170227_Comp	Total/NA	Water	Evaporation	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Rad (Continued)

Prep Batch: 298834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-1	Outfall002_20170227_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-298834/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298834/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-178167-1 MS	Outfall002_20170227_Comp	Total/NA	Water	LSC_Dist_Susp	
440-178167-1 MSD	Outfall002_20170227_Comp	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

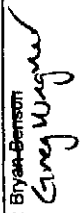
Laboratory: TestAmerica St. Louis






All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 002 Comp		ANALYSIS REQUIRED											
Test America Contact: Unvashi Patel 17461 Derran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.8944 (cell)		Total Dissolved Metals: Mercury (E245.1)											
Sampler: Bryan Benson 		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Chronic Toxicity - Selenium (EPA-821-R-02-013)											
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Total Dissolved Metals: (E200.8): Cu, Pb, Cd, Se (E200.7): Zn	Cyanide (SM4500-CN-E / E335.2)	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E905.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	Total Dissolved Metals: Mercury (E245.1)	Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.	Comments	
Outfall 002	Outfall002_20170227_Comp_F	2/27/2017 / 0700	WM	1L Poly	3	None	200	Yes	X						
	Outfall002_20170227_Comp	2/27/2017 / 0800	WM	borellite vials	3	None	320	Yes							
			WM	500 ml. Poly	3	NaOH	220	Yes		X					
			WM	2.5 Gal Cube	3	None	225	Yes			X				
			WM	1 L Glass Amber	3	None	230	Yes							
			WM	1 Gal Amber	3	None	235	No							

Relinquished By: 	Date/Time: 2/27/17 1750	Company: JAXX	Received By: 	Date/Time: 2/27/17 1250	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By: 	Date/Time: 2/27/17 1715	Company: JAXX	Received By: 	Date/Time: 2/27/17 1745	Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months.
Relinquished By: WRC M	Date/Time: 0.4/0.9 0.8/1.3 1.1/1.6	Company: JAXX	Received By: 	Date/Time: 2/27/17 1745	Data Requirements: (Check) No Level IV: _____ All Level IV: _____ X

2.9/3.4
 0.7/1.2
 0.3/0.8
 1.0/1.5
 1.3/1.6
 2.3/2.8
 1.6/2.1
 1.255



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 002 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.950.7312, 818.599.0702 (cell)</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>								
<p>Test America Contact: Urvashi Patel 17461 Denison Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</p>		<p>Container Type: 1L Poly # or Preservative: None # of Cont.: 3 Bottle # MSMSD: 200 Yes</p>		<p>Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0, K-40, Cs-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)</p>		<p>Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MSMSD. Only test if first or second rain events of the year</p>								
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# or Preservative	Bottle # MSMSD	Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se		Total Dissolved Metals: Mercury (E245.1)		Chronic Toxicity - Selenium (EPA-821-R-02-013)		Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0, K-40, Cs-137 (E901.0 or E901.1)		Filter and preserve w/in 24hrs of receipt at lab	
Outfall 002	Outfall002_20170227_Comp_F	2/27/2017/0900	WM	1L Poly	None	200	Yes		X		X		X		Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.	
	Outfall002_20170227_Comp	2/27/2017/0900	WM	borosilicate vials	None	320	Yes								Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MSMSD.	
			WM	500 mL Poly	NaOH	220	Yes		X						Only test if first or second rain events of the year	
			WM	2.5 Gal Cube	None	225	Yes									
			WM	1L Glass Amber	None	230	Yes									
			WM	4-Gal-Cube	None	235	No		Not collected		X					

Relinquished By: *[Signature]* Date/Time: 2/27/17 1750
 Company: JAH

Relinquished By: *[Signature]* Date/Time: 2/27/17 1750
 Company: JAH

Relinquished By: *[Signature]* Date/Time: 2/27/17 1750
 Company: JAH

0.4/0.9 2.9/3.4 0.7/1.2 2.3/2.8
 0.8/1.3 1.0/1.5 0.3/0.8 1.6/2.1
 1.1/1.6

1855



TestAmerica Irvine
 17461 Derian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PMT	440-178167 Chain of Custody	XC No: 40-108182.1
Client Contact: Shipping/Receiving		Phone: urvashi.patel@testamericainc.com	E-Mail	State of Origin: California	Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-178167-1	Preservation Codes:
Address: 13715 Rider Trail North, ...		Due Date Requested: 3/9/2017		A - HCL M - Hexane B - NaOH N - None O - AsNaO2 C - Zn Acetate D - Nitric Acid P - Na2O4S E - NaHSO4 R - Na2S2O3 F - MeOH G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA W - pH 4.5 K - EDTA L - EDA Z - other (specify) Other:	
City: Earth City		TAT Requested (days):		Analysis Requested	
State, Zip: MO, 63045		PO #:		901.1 Ca/Fill_Geo_0 K-40 and Cesium-137	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:		903.0/PreSep_21 Radium-226	
Email:		Project #:		904.0/PreSep_0 Radium-228	
Project Name: Boeing NPDES SSFL outfalls		44009879		905.5/90/PreSep_7 Strontium-90	
Site: SSOWE		SSOWE		906.0/LSC_Dist_Susp Tritium	
Sample Identification - Client ID (Lab ID)		Sample Date		A01R_Ultrachrom_Actin Total Uranium	
Outfall002_20170227_Comp (440-178167-1)	Sample Time: 09:00 Pacific	Sample Date: 2/27/17	Sample Type (C=comp, G=grab):	900.0/Evaporation Gross Alpha/Beta	Perform MS/MSD (Yes or No)
Outfall002_20170227_Comp (440-178167-1MS)	Sample Time: 09:00 Pacific	Sample Date: 2/27/17	Matrix (W=water, S=solid, O=on-site, B=1-10min, A=Air)	Field Filtered Sample (Yes or No)	Total Number of Containers
Outfall002_20170227_Comp (440-178167-1MSD)	Sample Time: 09:00 Pacific	Sample Date: 2/27/17	Preservation Code:	X	2
				X	Boeing SSFL, DO NOT FILTER, use prep date from preservation
				X	2
				X	Boeing SSFL, DO NOT FILTER, use prep date from preservation
				X	2
				X	Boeing SSFL, DO NOT FILTER, use prep date from preservation
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis of the matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 2					
Special Instructions/OC Requirements:					
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Empty Kit Relinquished by:					
Date/Time: 2/28/17 17:00					
Relinquished by: V. B. Bandi					
Date/Time: 3/1/17 10:15					
Relinquished by: [Signature]					
Date/Time: [Signature]					
Relinquished by: [Signature]					
Date/Time: [Signature]					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No					
Custody Seal No.:					
Cooler Temperature(s) °C and Other Remarks:					

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178167-2

Login Number: 178167

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178167-2

Login Number: 178167

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 03/02/17 12:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0,17.0,17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)		
440-178167-1	Outfall002_20170227_Comp	86.7		
440-178167-1 MS	Outfall002_20170227_Comp	90.3		
440-178167-1 MSD	Outfall002_20170227_Comp	90.6		
LCS 160-295953/2-A	Lab Control Sample	87.9		
MB 160-295953/1-A	Method Blank	86.7		
Tracer/Carrier Legend				
Ba = Ba Carrier				

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)		
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)		
440-178167-1	Outfall002_20170227_Comp	86.7	85.6		
440-178167-1 MS	Outfall002_20170227_Comp	90.3	86.0		
440-178167-1 MSD	Outfall002_20170227_Comp	90.6	83.0		
LCS 160-295966/2-A	Lab Control Sample	87.9	86.4		
MB 160-295966/1-A	Method Blank	86.7	87.9		
Tracer/Carrier Legend					
Ba = Ba Carrier					
Y = Y Carrier					

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)		
Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)		
440-178167-1	Outfall002_20170227_Comp	80.6	101		
440-178167-1 MS	Outfall002_20170227_Comp	82.1	100		
440-178167-1 MSD	Outfall002_20170227_Comp	80.6	105		
LCS 160-295967/2-A	Lab Control Sample	88.0	100		
MB 160-295967/1-A	Method Blank	77.8	97.2		
Tracer/Carrier Legend					
Sr (C) = Sr Carrier					
Y = Y Carrier					

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

			Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	U-232 (30-110)		
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8		
440-178167-1	Outfall002_20170227_Comp	89.2		
440-178167-1 MS	Outfall002_20170227_Comp	74.3		

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 002 Comp

TestAmerica Job ID: 440-178167-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-178167-1 MSD	Outfall002_20170227_Comp	89.0
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177314-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177314-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall004_20170217_Grab	440-177314-1	N/A	Water	2/17/2017 4:25:00 PM	E1664, E624, SM9221F, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177314-1:

- The laboratory received the sample in this SDG on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issues were noted:

- Analysis for Human Bacteroides was subcontracted to Source Molecular laboratory.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^x evaluated method accuracy and precision based on LCS/LCSD results.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170217 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, *EPA method 1664A*, *SAM348-357* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The subcontract laboratory received the sample for Human Bacteroides analysis past the holding time requirement (24-48 hours); therefore, the result for this analysis was qualified as estimated (UJ). The analytical holding time for the remaining analyses, as noted below, were met.

- 28 days for HEM; oil and grease
- 8 hours for *E. coli*

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. Biological controls were acceptable.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease). The method blank is not applicable to the biological method. The negative control sample was acceptable.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The presumptive test was analyzed with the positive detects for the target bacteria in the biological method.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773141

Analysis Method E1664

Sample Name Outfall004_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 4:25:00 PM Validation Level: 8

Lab Sample Name: 440-177314-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.2	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall004_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 4:25:00 PM Validation Level: 8

Lab Sample Name: 440-177314-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	U	
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SAM348-357**Sample Name** Outfall004_20170217_Grab **Matrix Type:** **Result Type:** TRG**Sample Date:** 2/17/2017 **Validation Level:** 8**Lab Sample Name:**

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides		HumanBact				CEs/100	absent	UJ	H

Analysis Method SM9221F**Sample Name** Outfall004_20170217_Grab **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/17/2017 4:25:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177314-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	160	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177314-1

Client Project/Site: Annual Outfall 004 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/2/2017 10:04:18 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/2/2017 10:04:18 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177314-1	Outfall004_20170217_Grab	Water	02/17/17 16:25	02/17/17 19:50
440-177314-3	TB-20170217	Water	02/17/17 16:25	02/17/17 19:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Job ID: 440-177314-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177314-1

Comments

No additional comments.

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

Receipt Exceptions

Outfall004_20170217_Grab (440-177314-1), Outfall004_20170217_Grab_Extra (440-177314-2) and TB-20170217 (440-177314-3)

Per Client request Do not log in MST-Human Bacteroidales
It will be sent direct to Lab.

GC/MS VOA

Method(s) 624: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 440-389071 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 624, 8260B: Internal standard (ISTD) response for TBA-d9 for the following samples was below acceptance criteria: (CCVIS 440-389071/2). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390637 and analytical batch 440-390758. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Client Sample ID: Outfall004_20170217_Grab

Lab Sample ID: 440-177314-1

Date Collected: 02/17/17 16:25

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/18/17 16:30	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Acrolein	ND		5.0	2.5	ug/L			02/18/17 16:30	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/18/17 16:30	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Benzene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Bromoform	ND		1.0	0.40	ug/L			03/01/17 05:00	1
Bromomethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Chloroethane	ND		1.0	0.40	ug/L			03/01/17 05:00	1
Chloroform	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Chloromethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/01/17 05:00	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Toluene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Trichloroethene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/01/17 05:00	1
Naphthalene	ND		1.0	0.40	ug/L			03/01/17 05:00	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/01/17 05:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	110		80 - 128		02/18/17 16:30	1
Dibromofluoromethane (Surr)	106		76 - 132		02/18/17 16:30	1
4-Bromofluorobenzene (Surr)	94		80 - 120		02/18/17 16:30	1
4-Bromofluorobenzene (Surr)	104		80 - 120		03/01/17 05:00	1
Dibromofluoromethane (Surr)	99		76 - 132		03/01/17 05:00	1
Toluene-d8 (Surr)	110		80 - 128		03/01/17 05:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.2	1.5	mg/L		02/26/17 11:03	02/27/17 11:09	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Client Sample ID: Outfall004_20170217_Grab

Lab Sample ID: 440-177314-1

Date Collected: 02/17/17 16:25

Matrix: Water

Date Received: 02/17/17 19:50

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	160		1.8	1.8	MPN/100mL			02/17/17 20:26	1

Client Sample ID: TB-20170217

Lab Sample ID: 440-177314-3

Date Collected: 02/17/17 16:25

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Benzene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Bromoform	ND		1.0	0.40	ug/L			03/01/17 04:34	1
Bromomethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Chloroethane	ND		1.0	0.40	ug/L			03/01/17 04:34	1
Chloroform	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Chloromethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/01/17 04:34	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Toluene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Trichloroethene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/01/17 04:34	1
Naphthalene	ND		1.0	0.40	ug/L			03/01/17 04:34	1
Xylenes, Total	ND		1.0	0.50	ug/L			03/01/17 04:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120		03/01/17 04:34	1
Dibromofluoromethane (Surr)	102		76 - 132		03/01/17 04:34	1
Toluene-d8 (Surr)	110		80 - 128		03/01/17 04:34	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Client Sample ID: Outfall004_20170217_Grab

Lab Sample ID: 440-177314-1

Date Collected: 02/17/17 16:25

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391136	03/01/17 05:00	AA	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	389071	02/18/17 16:30	AA	TAL IRV
Total/NA	Prep	1664A			957 mL	1000 mL	390637	02/26/17 11:03	L1A	TAL IRV
Total/NA	Analysis	1664A		1			390758	02/27/17 11:09	JSS	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	390797		ZEM	TAL IRV
							(Start)	02/17/17 20:26		
							(End)	02/20/17 16:20		

Client Sample ID: TB-20170217

Lab Sample ID: 440-177314-3

Date Collected: 02/17/17 16:25

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391136	03/01/17 04:34	AA	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-389071/3
Matrix: Water
Analysis Batch: 389071

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/18/17 11:06	1
Acrolein	ND		5.0	2.5	ug/L			02/18/17 11:06	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/18/17 11:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	110		80 - 128		02/18/17 11:06	1
Dibromofluoromethane (Surr)	109		76 - 132		02/18/17 11:06	1
4-Bromofluorobenzene (Surr)	96		80 - 120		02/18/17 11:06	1

Lab Sample ID: LCS 440-389071/4
Matrix: Water
Analysis Batch: 389071

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	22.4		ug/L		90	37 - 150
Acrolein	25.0	17.1		ug/L		69	10 - 145
Acrylonitrile	250	236		ug/L		95	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	108		80 - 128
Dibromofluoromethane (Surr)	106		76 - 132
4-Bromofluorobenzene (Surr)	95		80 - 120

Lab Sample ID: LCSD 440-389071/5
Matrix: Water
Analysis Batch: 389071

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	25.0	23.4		ug/L		93	37 - 150	4	25
Acrolein	25.0	18.2		ug/L		73	10 - 145	6	30
Acrylonitrile	250	260		ug/L		104	48 - 140	9	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 128
Dibromofluoromethane (Surr)	110		76 - 132
4-Bromofluorobenzene (Surr)	91		80 - 120

Lab Sample ID: 550-77703-A-1 MS
Matrix: Water
Analysis Batch: 389071

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	22.1		ug/L		88	10 - 140
Acrolein	ND		25.0	ND	LN	ug/L		0	10 - 147
Acrylonitrile	ND		250	229		ug/L		92	38 - 144

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 550-77703-A-1 MS
Matrix: Water
Analysis Batch: 389071

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	112		80 - 128
Dibromofluoromethane (Surr)	102		76 - 132
4-Bromofluorobenzene (Surr)	93		80 - 120

Lab Sample ID: 550-77703-A-1 MSD
Matrix: Water
Analysis Batch: 389071

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	22.5		ug/L		90	10 - 140	2	25
Acrolein	ND		25.0	ND	LN	ug/L		0	10 - 147	NC	40
Acrylonitrile	ND		250	238		ug/L		95	38 - 144	4	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	91		80 - 120

Lab Sample ID: MB 440-391136/4
Matrix: Water
Analysis Batch: 391136

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Benzene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Bromoform	ND		1.0	0.40	ug/L			02/28/17 19:47	1
Bromomethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Chloroethane	ND		1.0	0.40	ug/L			02/28/17 19:47	1
Chloroform	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Chloromethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/28/17 19:47	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Toluene	ND		0.50	0.25	ug/L			02/28/17 19:47	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-391136/4
Matrix: Water
Analysis Batch: 391136

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 19:47	1
Naphthalene	ND		1.0	0.40	ug/L			02/28/17 19:47	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/28/17 19:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		02/28/17 19:47	1
Dibromofluoromethane (Surr)	98		76 - 132		02/28/17 19:47	1
Toluene-d8 (Surr)	111		80 - 128		02/28/17 19:47	1

Lab Sample ID: LCS 440-391136/5
Matrix: Water
Analysis Batch: 391136

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	23.5		ug/L		94	70 - 130
1,1,1,2-Tetrachloroethane	25.0	23.9		ug/L		96	63 - 130
1,1,2-Trichloroethane	25.0	26.1		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	24.3		ug/L		97	64 - 130
1,1-Dichloroethene	25.0	22.1		ug/L		88	70 - 130
1,2-Dichlorobenzene	25.0	25.4		ug/L		102	70 - 130
1,2-Dichloroethane	25.0	23.5		ug/L		94	57 - 138
1,2-Dichloropropane	25.0	24.7		ug/L		99	67 - 130
1,3-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
1,4-Dichlorobenzene	25.0	25.8		ug/L		103	70 - 130
Benzene	25.0	23.9		ug/L		96	68 - 130
Bromoform	25.0	24.0		ug/L		96	60 - 148
Bromomethane	25.0	23.5		ug/L		94	64 - 139
Carbon tetrachloride	25.0	23.2		ug/L		93	60 - 150
Chlorobenzene	25.0	25.2		ug/L		101	70 - 130
Dibromochloromethane	25.0	24.4		ug/L		98	69 - 145
Chloroethane	25.0	24.2		ug/L		97	64 - 135
Chloroform	25.0	24.1		ug/L		96	70 - 130
Chloromethane	25.0	26.9		ug/L		108	47 - 140
cis-1,3-Dichloropropene	25.0	24.9		ug/L		100	70 - 133
Bromodichloromethane	25.0	24.4		ug/L		98	70 - 132
Ethylbenzene	25.0	25.3		ug/L		101	70 - 130
Methylene Chloride	25.0	23.9		ug/L		96	52 - 130
Tetrachloroethene	25.0	25.4		ug/L		101	70 - 130
Toluene	25.0	25.6		ug/L		102	70 - 130
trans-1,2-Dichloroethene	25.0	24.4		ug/L		98	70 - 130
trans-1,3-Dichloropropene	25.0	24.5		ug/L		98	70 - 132
Trichlorofluoromethane	25.0	22.9		ug/L		92	60 - 150
Vinyl chloride	25.0	24.9		ug/L		100	59 - 133

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-391136/5
Matrix: Water
Analysis Batch: 391136

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	25.0	23.8		ug/L		95	70 - 130
cis-1,2-Dichloroethene	25.0	23.8		ug/L		95	70 - 133
Naphthalene	25.0	22.7		ug/L		91	60 - 140
Xylenes, Total	50.0	51.1		ug/L		102	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	107		80 - 128

Lab Sample ID: 720-77872-C-1 MS
Matrix: Water
Analysis Batch: 391136

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	190		25.0	211	BB	ug/L		99	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	25.0		ug/L		100	63 - 130
1,1,2-Trichloroethane	1.4		25.0	27.4		ug/L		104	70 - 130
1,1-Dichloroethane	160		25.0	188	BB	ug/L		96	65 - 130
1,1-Dichloroethene	18		25.0	40.3		ug/L		90	70 - 130
1,2-Dichlorobenzene	ND		25.0	25.9		ug/L		104	70 - 130
1,2-Dichloroethane	0.86		25.0	25.2		ug/L		97	56 - 146
1,2-Dichloropropane	ND		25.0	26.9		ug/L		107	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.7		ug/L		107	70 - 130
Benzene	6.3		25.0	31.1		ug/L		99	66 - 130
Bromoform	ND		25.0	24.5		ug/L		98	59 - 150
Bromomethane	ND		25.0	24.7		ug/L		99	62 - 131
Carbon tetrachloride	ND		25.0	25.0		ug/L		100	60 - 150
Chlorobenzene	ND		25.0	25.1		ug/L		101	70 - 130
Dibromochloromethane	ND		25.0	25.1		ug/L		100	70 - 148
Chloroethane	ND		25.0	25.7		ug/L		103	68 - 130
Chloroform	0.77		25.0	25.9		ug/L		101	70 - 130
Chloromethane	ND		25.0	29.0		ug/L		116	39 - 144
cis-1,3-Dichloropropene	ND		25.0	25.1		ug/L		100	70 - 133
Bromodichloromethane	ND		25.0	28.3		ug/L		113	70 - 138
Ethylbenzene	ND		25.0	25.3		ug/L		101	70 - 130
Methylene Chloride	ND		25.0	24.3		ug/L		97	52 - 130
Tetrachloroethene	0.35	J,DX	25.0	25.6		ug/L		101	70 - 137
Toluene	ND		25.0	25.6		ug/L		102	70 - 130
trans-1,2-Dichloroethene	7.2		25.0	32.6		ug/L		102	70 - 130
trans-1,3-Dichloropropene	ND		25.0	24.8		ug/L		99	70 - 138
Trichlorofluoromethane	ND		25.0	24.2		ug/L		97	60 - 150
Vinyl chloride	66		25.0	91.1		ug/L		99	50 - 137
Trichloroethene	220		25.0	247	BB	ug/L		102	70 - 130
cis-1,2-Dichloroethene	480	EY	25.0	503	EY BB	ug/L		93	70 - 130
Naphthalene	ND		25.0	24.2		ug/L		97	60 - 140
Xylenes, Total	ND		50.0	51.6		ug/L		103	70 - 133

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	105		80 - 128

Lab Sample ID: 720-77872-C-1 MSD
Matrix: Water
Analysis Batch: 391136

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	190		25.0	205	BB	ug/L		77	70 - 130	3	20
1,1,2,2-Tetrachloroethane	ND		25.0	26.4		ug/L		106	63 - 130	5	30
1,1,2-Trichloroethane	1.4		25.0	28.2		ug/L		107	70 - 130	3	25
1,1-Dichloroethane	160		25.0	185	BB	ug/L		85	65 - 130	1	20
1,1-Dichloroethene	18		25.0	39.4		ug/L		87	70 - 130	2	20
1,2-Dichlorobenzene	ND		25.0	26.8		ug/L		107	70 - 130	3	20
1,2-Dichloroethane	0.86		25.0	25.6		ug/L		99	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	26.5		ug/L		106	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	26.6		ug/L		106	70 - 130	2	20
1,4-Dichlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130	1	20
Benzene	6.3		25.0	30.7		ug/L		97	66 - 130	1	20
Bromoform	ND		25.0	26.3		ug/L		105	59 - 150	7	25
Bromomethane	ND		25.0	24.8		ug/L		99	62 - 131	0	25
Carbon tetrachloride	ND		25.0	24.8		ug/L		99	60 - 150	1	25
Chlorobenzene	ND		25.0	25.9		ug/L		104	70 - 130	3	20
Dibromochloromethane	ND		25.0	26.0		ug/L		104	70 - 148	4	25
Chloroethane	ND		25.0	25.2		ug/L		101	68 - 130	2	25
Chloroform	0.77		25.0	25.6		ug/L		99	70 - 130	1	20
Chloromethane	ND		25.0	28.7		ug/L		115	39 - 144	1	25
cis-1,3-Dichloropropene	ND		25.0	26.3		ug/L		105	70 - 133	5	20
Bromodichloromethane	ND		25.0	26.5		ug/L		106	70 - 138	7	20
Ethylbenzene	ND		25.0	26.2		ug/L		105	70 - 130	3	20
Methylene Chloride	ND		25.0	24.3		ug/L		97	52 - 130	0	20
Tetrachloroethene	0.35	J,DX	25.0	26.7		ug/L		105	70 - 137	4	20
Toluene	ND		25.0	26.5		ug/L		106	70 - 130	4	20
trans-1,2-Dichloroethene	7.2		25.0	31.8		ug/L		98	70 - 130	3	20
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	70 - 138	4	25
Trichlorofluoromethane	ND		25.0	24.2		ug/L		97	60 - 150	0	25
Vinyl chloride	66		25.0	88.4		ug/L		88	50 - 137	3	30
Trichloroethene	220		25.0	237	BB	ug/L		64	70 - 130	4	20
cis-1,2-Dichloroethene	480	EY	25.0	492	EY BB	ug/L		47	70 - 130	2	20
Naphthalene	ND		25.0	25.7		ug/L		103	60 - 140	6	30
Xylenes, Total	ND		50.0	53.8		ug/L		108	70 - 133	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	108		80 - 128

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390637/1-A
 Matrix: Water
 Analysis Batch: 390758

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 390637

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/26/17 11:03	02/27/17 11:09	1

Lab Sample ID: LCS 440-390637/2-A
 Matrix: Water
 Analysis Batch: 390758

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 390637

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	37.9		mg/L		95	78 - 114

Lab Sample ID: LCSD 440-390637/3-A
 Matrix: Water
 Analysis Batch: 390758

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 390637

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	37.1		mg/L		93	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

GC/MS VOA

Analysis Batch: 389071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177314-1	Outfall004_20170217_Grab	Total/NA	Water	624	
MB 440-389071/3	Method Blank	Total/NA	Water	624	
LCS 440-389071/4	Lab Control Sample	Total/NA	Water	624	
LCSD 440-389071/5	Lab Control Sample Dup	Total/NA	Water	624	
550-77703-A-1 MS	Matrix Spike	Total/NA	Water	624	
550-77703-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 391136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177314-1	Outfall004_20170217_Grab	Total/NA	Water	624	
440-177314-3	TB-20170217	Total/NA	Water	624	
MB 440-391136/4	Method Blank	Total/NA	Water	624	
LCS 440-391136/5	Lab Control Sample	Total/NA	Water	624	
720-77872-C-1 MS	Matrix Spike	Total/NA	Water	624	
720-77872-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Prep Batch: 390637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177314-1	Outfall004_20170217_Grab	Total/NA	Water	1664A	
MB 440-390637/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390637/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390637/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177314-1	Outfall004_20170217_Grab	Total/NA	Water	1664A	390637
MB 440-390637/1-A	Method Blank	Total/NA	Water	1664A	390637
LCS 440-390637/2-A	Lab Control Sample	Total/NA	Water	1664A	390637
LCSD 440-390637/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390637

Biology

Analysis Batch: 390797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177314-1	Outfall004_20170217_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
BB	Sample > 4X spike concentration
EY	Result exceeds normal dynamic range; reported as a min. est.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 004 Grab

TestAmerica Job ID: 440-177314-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1,1-Trichloroethane
624		Water	1,1,2,2-Tetrachloroethane
624		Water	1,1,2-Trichloroethane
624		Water	1,1-Dichloroethane
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichlorobenzene
624		Water	1,2-Dichloroethane
624		Water	1,2-Dichloropropane
624		Water	1,3-Dichlorobenzene
624		Water	1,4-Dichlorobenzene
624		Water	2-Chloroethyl vinyl ether
624		Water	Acrolein
624		Water	Acrylonitrile
624		Water	Benzene
624		Water	Bromodichloromethane
624		Water	Bromoform
624		Water	Bromomethane
624		Water	Carbon tetrachloride
624		Water	Chlorobenzene
624		Water	Chloroethane
624		Water	Chloroform
624		Water	Chloromethane
624		Water	cis-1,2-Dichloroethene
624		Water	cis-1,3-Dichloropropene
624		Water	Dibromochloromethane
624		Water	Ethylbenzene
624		Water	Methylene Chloride
624		Water	Naphthalene
624		Water	Tetrachloroethene
624		Water	Toluene
624		Water	trans-1,2-Dichloroethene
624		Water	trans-1,3-Dichloropropene
624		Water	Trichloroethene
624		Water	Trichlorofluoromethane
624		Water	Vinyl chloride
624		Water	Xylenes, Total



440-177314 Chain of Custody

Test America

CHAIN OF CUSTODY FORM

177314

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 004 Grab		Field Readings Meter serial # Field Readings: (Include units) Time of Readings: <u>16:20</u>							
Test America Contact: Urvashti Patel 17461 Derrian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		pH <u>7.39</u> pH unit Temp <u>10.04</u> °C/F							
Sampler: <i>Bill Clarke</i>		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Field readings QC Checked by: <u>BC</u> Date/Time: <u>16:50</u>							
<small>TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-16; TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</small>											
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	M/MS/SD	ANALYSIS REQUIRED		Comments
Outfall 004	Outfall004_20170217_Grab	2/17/2017 <u>16:25</u>	WM	125 mL Sterile Poly	1	None	5	No	MST-Bacteroides, Human (SAM348-357)	Oil & Grease (E1604-HEM)	
			WM	125 mL Sterile Poly	3	Na2S2O3	10	No	VOCs PP + xylenes, Freon 11 (E824)	VOCs - only A+A+2CVE (E824)	
			WM	1 L Glass Amber	2	HCl	15	No			
			WM	40 mL VOA	3	HCl	40	No			
			WM	40 mL VOA	3	None	55	No			
			WM	1 L Glass Amber	2	HCl	15	No			
			WM	40 mL VOA	3	HCl	40	No			
			WM	40 mL VOA	3	None	55	No			
			WQ	40 mL VOA	2	HCl	40	No			
			WQ	40 mL VOA	2	None	55	No			
Trip Blanks	TB-20170217	2/17/2017 <u>16:5</u>									

Legend: R = Routine, A = Annual

Relinquished By <i>Bill Clarke</i>	Date/Time: 2-17-17 16:55	Company:	Received By <i>[Signature]</i>	Date/Time: 2-17-17 16:55	Company:
Relinquished By <i>[Signature]</i>	Date/Time: 2-17-17 19:50	Company:	Received By <i>[Signature]</i>	Date/Time: 2/17/17 10:50	Company:
Relinquished By	Date/Time:	Company:	Received By	Date/Time:	Company:

Turn-around time: (Check)
 24 Hour: ___ 72 Hour: ___ 10 Day: X
 48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity: (Check)
 Intact: ___ On Ice: 16:50
16:50

Store samples for 6 months.
 Data Requirements: (Check)
 No Level IV: ___ All Level IV: X

(Beard)
0.4/0.7 -c
0.5/0.54



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177314-1

Login Number: 177314

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177392-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 31, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-177392-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall004_20170218_ Comp	440-177392-1	N/A	Water	2/18/17 12:05 PM	E1613B, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E525.2, E608, E625, EPA100.2, EPA-821- R-02-013, SM2340, SM2540C/D, SM4500-CN-E
Outfall004_20170218_ Comp_F	440-177392-2	N/A	Water	2/18/17 12:05 PM	E200.7, E200.8, E245.1, SM2340



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177392-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, with one exception noted below.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Samples for method 200.7 analysis were transferred to TA-Denver.
- The receipt checklist from TA-Sacramento noted extra sample volume was received not listed on the transfer COC.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package.

The following issues were noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except the following: 2,3,7,8-TCDD, 2,3,4,7,8-PeCDF, 1,2,3,7,8,9-HxCDF, and 2,3,4,6,7,8-HxCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result above the reporting limit. The peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall004_20170218_Comp; therefore, the result for total HpCDD was qualified as a nondetect (U). The



reviewer verified that peaks comprising the results for remaining totals in the sample included more peaks than the method blank totals. Remaining detected total results were qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for results flagged by the laboratory as EMPC results. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported. Isomers 1,2,3,4,7,8,9-HpCDF and 1,2,3,7,8,9-HxCDF were reported below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Isomer 2,3,4,6,7,8-HxCDF reported as an EMPC was qualified as an estimated nondetect (UJ) at the level of the EMPC. Totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.7, 200.8, 245.1 AND SM2340B— METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^x reviewed the SDG on April 14, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8 and 245.1*, *Standard Method 2340B*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall004_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt at TA-Irvine. All dissolved metals, dissolved mercury and dissolved hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. When appropriate, the initial calibration r values were ≥ 0.995 , y -intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits for Methods 200.7 and 200.8. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the ICPMS CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results. It should be noted that complete raw data was not provided for ICPMS calibration blanks and method blanks; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICPMS ICSA analyses; this review is based on summary data for those analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries (total and dissolved) were within the method control limits of 85-115% for methods 200.8 and 245.1, and within laboratory control limits for method 200.7.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall004_20170218_Comp_F for Method 200.8. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively. MS/MSD analyses were not performed on a sample in this SDG for total metals by Method 200.8, or for total or dissolved analytes by Methods 245.1 or 200.7.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

L. Calvin of MEC^X reviewed the SDG on April 5, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits and PCB LCS/LCSD RPDs were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy or accuracy and precision based on the respective pesticide LCS and PCB LCS/LCSD results.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 945 milliliters for both pesticides and PCBs was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.



VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.



VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^x reviewed the SDG on April 5, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1)*, *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Acenaphthylene was detected in the method blank below the reporting limit at 0.312 $\mu\text{g/L}$; however, as acenaphthylene was not detected in the associated sample, no qualification was necessary. The method blank had no other target compound detects.

VII.3.2. LABORATORY CONTROL SAMPLES

The LCS associated with the original analysis of sample Outfall004_20170218_Comp. had a recovery below the control limits of 60-118% at 58% for 2-chloronaphthalene. The samples associated with this extraction batch were re-extracted for other reasons (a lost batch MSD) and were reported from the second extraction batch; however, the second LCS had recoveries below the control limits of 54-110% at 52% for n-nitrosodiphenylamine, below the control limits of 33-150% at 17% for bis(2-chloroethoxy)methane and no recoveries of benzidine or 3,3'-dichlorobenzidine. The laboratory reported results for nitrosodiphenylamine, bis(2-chloroethoxy)methane, benzidine, and 3,3'-dichlorobenzidine from both extraction batches. The reviewer chose to report the four compounds from the original extract associated with acceptable LCS recoveries and reject (R) the secondary results. The outlier for 2-chloronaphthalene in the original LCS did not affect sample results, as remaining results were associated with the second LCS.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy based on the LCS results.



VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1 FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2 FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 910 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 525.2*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VIII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted approximately 48 hours past the holding time of within 24 hours of collection for diazinon. The nondetect result for diazinon was

qualified as estimated (UJ) in sample Outfall_20170218_Comp. The sample was analyzed within 30 days of extraction.

VIII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. The sample was analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSDs $\leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recoveries were within the control limits of 70-130%.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within laboratory-established control limits of 70-130%.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG due to insufficient sample volume. MEC^X evaluated method accuracy based on the LCS results.

VIII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VIII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.



VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 935 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 100.2, 218.6, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IX.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for asbestos analysis past the 48-hour holding time and was filtered one day past the required holding time. The laboratory subjected the sample to UV and ozonation to minimize bacteriological growth. The sample was received at the subcontracted laboratory for chronic toxicity analysis past the 36-hour holding time and was analyzed 41 hours past the required holding time. The results for chronic toxicity and asbestos were qualified as estimated (J or UJ). The remaining analytical holding times as listed below were met:

- 24 hours from collection for hexavalent chromium
- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recoveries for ammonia and hexavalent chromium were within the laboratory control limits of 10-200% and 50-150%, respectively. Analytical balance calibration logs were not provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was



performed to verify culture health and sensitivity. Calibration information was not provided for asbestos analysis.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects of sufficient quantity to qualify sample results.

IX.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

IX.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IX.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall004_20170218_Comp for hexavalent chromium. Recoveries and RPDs were within the laboratory control limits of 90-110% and $\leq 10\%$, respectively.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

It should be noted that no laboratory QC or raw data was presented in the SDG for asbestos analysis; however, the laboratory noted that the method-required analytical sensitivity of 0.2 million fibers per liter (MFL) was not met due to high particulate content of the sample.

IX.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773921

Analysis Method E1613B

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000021	0.00011	0.00000039	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00044	0.00011	0.0000017	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000028	0.000055	0.00000037	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000035	0.000055	0.00000076	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000046	0.000055	0.00000047	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000087	0.000055	0.00000025	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000047	0.000055	0.00000018	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000016	0.000055	0.00000024	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000014	0.000055	0.00000019	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000019	0.000055	0.00000021	ug/L	J,DX	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000011	0.000055	0.00000015	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000028	0.000055	0.00000014	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000040	0.000055	0.00000023	ug/L	J,DXqMB	U	B
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000011	0.000055	0.00000021	ug/L	J,DXq	UJ	*III
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000033	0.000055	0.00000014	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000011	0.00000067	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000025	0.000011	0.00000011	ug/L	J,DXqMB	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000011	0.00000017	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000040	0.000055	0.00000042	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000076	0.000055	0.00000076	ug/L	MB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000021	0.000055	0.00000022	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000011	0.000055	0.00000017	ug/L	J,DXqMB	J	B, DNQ, *III

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Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000045	0.000055	0.00000014	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000080	0.000055	0.00000023	ug/L	J,DXqMB	J	B, DNQ, *III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000053	0.000011	0.00000011	ug/L	J,DXqMB	J	B, DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000011	0.00000017	ug/L	U	U	

Analysis Method E200.7

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Boron	T	7440-42-8	0.033	0.050	0.0044	mg/L	J,DX	J	DNQ

Sample Name Outfall004_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Boron	D	7440-42-8	0.034	0.050	0.0044	mg/L	J,DX	J	DNQ, H

Analysis Method E200.8

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.3	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.1	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall004_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.6	2.0	0.50	ug/L	QP	J	H

Analysis Method E200.8

Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	U	U	

Analysis Method E245.1

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall004_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	2.6	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrate (as N)	N	14797-55-8	0.63	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.63	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	3.0	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:05:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E525.2**Sample Name** Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:05:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	ND	1.1	0.53	ug/L	UBU	U	
Diazinon	N	333-41-5	ND	0.27	0.13	ug/L	UBU	UJ	H

Analysis Method E608**Sample Name** Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:05:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0053	0.0042	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0053	0.0032	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.011	0.0042	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0053	0.0016	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0053	0.0026	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.53	0.26	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.53	0.26	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.53	0.26	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.53	0.26	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.53	0.26	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.53	0.26	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.53	0.26	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.011	0.0042	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.11	0.085	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0053	0.0037	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0053	0.0021	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0053	0.0032	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0053	0.0021	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.011	0.0032	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0053	0.0021	ug/L	U	U	

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Endrin aldehyde	N	7421-93-4	ND	0.011	0.0021	ug/L	U	U
gamma-BHC (Lindane)	N	58-89-9	ND	0.011	0.0032	ug/L	U	U
Heptachlor	N	76-44-8	ND	0.011	0.0032	ug/L	U	U
Heptachlor epoxide	N	1024-57-3	ND	0.0053	0.0026	ug/L	U	U
Toxaphene	N	8001-35-2	ND	0.53	0.26	ug/L	U	U

Analysis Method E625

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	1.06	0.529	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.529	0.212	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	1.06	0.529	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.529	0.212	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.529	0.212	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.529	0.212	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	1.06	0.529	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	2.12	1.06	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	2.12	1.06	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	5.29	2.12	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.29	2.12	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2	ND	5.29	2.12	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	ND	0.529	0.212	ug/L	U	U	
2-Chlorophenol	N	95-57-8	ND	1.06	0.529	ug/L	U	U	
2-Nitrophenol	N	88-75-5	ND	2.12	1.06	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.29	2.12	ug/L	ULR	R	D
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.49	2.20	ug/L	U	U	
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	5.29	2.12	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3	ND	1.06	0.529	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	ND	2.12	0.212	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.529	0.212	ug/L	U	U	
4-Nitrophenol	N	100-02-7	ND	5.29	2.12	ug/L	U	U	
Acenaphthene	N	83-32-9	ND	0.529	0.212	ug/L	U	U	
Acenaphthylene	N	208-96-8	ND	0.529	0.212	ug/L	U	U	
Anthracene	N	120-12-7	ND	0.529	0.212	ug/L	U	U	
Benzidine	N	92-87-5	ND	10.6	5.29	ug/L	ULR	R	D
Benzidine	N	92-87-5	ND	11.0	5.49	ug/L	U	U	
Benzo(a)anthracene	N	56-55-3	ND	5.29	2.12	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	ND	2.12	0.529	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2	ND	2.12	1.06	ug/L	U	U	
Benzo(g,h,i)perylene	N	191-24-2	ND	5.29	2.12	ug/L	U	U	

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Benzo(k)fluoranthene	N	207-08-9	ND	0.529	0.265	ug/L	U	U	
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.529	0.212	ug/L	ULR	R	D
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.549	0.220	ug/L	U	U	
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.529	0.212	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.29	2.12	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	ND	5.29	2.12	ug/L	U	U	
Chrysene	N	218-01-9	ND	0.529	0.212	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	ND	0.529	0.265	ug/L	U	U	
Diethyl phthalate	N	84-66-2	ND	1.06	0.529	ug/L	U	U	
Dimethyl phthalate	N	131-11-3	ND	0.529	0.265	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2	ND	2.12	1.06	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0	ND	5.29	2.12	ug/L	U	U	
Fluoranthene	N	206-44-0	ND	0.529	0.212	ug/L	U	U	
Fluorene	N	86-73-7	ND	0.529	0.212	ug/L	U	U	
Hexachlorobenzene	N	118-74-1	ND	1.06	0.529	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3	ND	2.12	0.529	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4	ND	5.29	2.12	ug/L	U	U	
Hexachloroethane	N	67-72-1	ND	3.17	0.529	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	2.12	1.06	ug/L	U	U	
Isophorone	N	78-59-1	ND	1.06	0.529	ug/L	U	U	
Naphthalene	N	91-20-3	ND	1.06	0.529	ug/L	U	U	
Nitrobenzene	N	98-95-3	ND	1.06	0.529	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	2.12	1.06	ug/L	U	U	
N-Nitrosodi-n-propylamine	N	621-64-7	ND	2.12	1.06	ug/L	U	U	
N-Nitrosodiphenylamine	N	86-30-6	ND	1.06	0.529	ug/L	ULR	R	D
N-Nitrosodiphenylamine	N	86-30-6	ND	1.10	0.549	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	2.12	1.06	ug/L	U	U	
Phenanthrene	N	85-01-8	ND	0.529	0.212	ug/L	U	U	
Phenol	N	108-95-2	ND	1.06	0.529	ug/L	U	U	
Pyrene	N	129-00-0	ND	0.529	0.212	ug/L	U	U	

Analysis Method EPA100.2

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Asbestos	N	1332-21-4	ND			MFL	U	UJ	H

Analysis Method *EPA-821-R-02-013*

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	24.58			% SURV		J	H

Analysis Method *SM2340*

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness	T	HARDNESS	25	1.3	0.18	mg/L			

Sample Name Outfall004_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness	D	HARDNESS	24	1.3	0.18	mg/L		J	H

Analysis Method *SM2540C*

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	68	10	5.0	mg/L			

Analysis Method *SM2540D*

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	12	2.5	1.3	mg/L			

Analysis Method *SM4500-CN-E*

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177392-1

Client Project/Site: Routine Outfall 004 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/17/2017 12:52:26 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/17/2017 12:52:26 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177392-1	Outfall004_20170218_Comp	Water	02/18/17 12:05	02/18/17 18:40
440-177392-2	Outfall004_20170218_Comp_F	Water	02/18/17 12:05	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Job ID: 440-177392-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177392-1**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.8° C, 1.9° C, 3.3° C and 3.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Outfall004_20170218_Comp_Extra (440-177392-3). received #3 not listed on coc.

GC/MS Semi VOA

Method(s) 625: The percent recoveries in the laboratory control sample (LCS) of preparation batch 440-390550 failed below lower acceptance limits for the following analytes: 3,3'-dichlorobenzidine; benzidine; N-nitrosodiphenylamine; and bis(2-chloroethoxy)methane. These analytes are classified as poor performers as they yield inconsistent recoveries from the preparation method. Sample 440-177392-1 could not be reextracted within hold time. This sample was also reported for the failing analytes as secondary from the original preparation batch, 440-389492.

Method(s) 625: The percent recoveries of benzidine and 3,3'-dichlorobenzidine in the matrix spike (MS) and matrix spike duplicate (MSD) of preparation batch 440-390550 were 0% and below lower acceptance limits. These analytes are classified as poor performers as they do not yield consistent recoveries from the preparation method.

Method(s) 625: The associated samples were reextracted in preparation batch 440-390550 with low laboratory control sample (LCS) failures for the following analytes: 3,3'-dichlorobenzidine; benzidine; N-nitrosodiphenylamine; and bis(2-chloroethoxy)methane. These analytes were reported from this preparation batch, 440-389492, as secondary data.

Method(s) 625: There is no matrix spike duplicate (MSD) from preparation batch 440-389492 available to report for the following samples: (440-177394-J-1-A MS). The MSD was lost during sample prep. Data from associated samples is reported as secondary.

Method(s) 625: The matrix spike (MS) recoveries for preparation batch 440-389492 and analytical batch 440-390358 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389207 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-389220 and analytical batch 440-389306. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Job ID: 440-177392-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Dioxin

Method(s) 1613B: The following sample have one or more analytes with a concentration less than the corresponding estimated detection limit (EDL): Outfall004_20170218_Comp (440-177392-1). The associated peaks elute at the correct retention time for both characteristic ions and have a signal to noise ratio greater than the method required 2.5:1; therefore, per client request, the detections have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

Method(s) 200.7 Rev 4.4: The method blank for preparation batch 280-362960 and 280-363011 and analytical batch 280-363489 contained (0.0143mg/L) Mg above the reporting limit (RL, 0.020mg/L). Associated samples were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method:3005/200.7

Outfall004_20170218_Comp_F (440-177392-2), (MB 280-362960/1-B) and (280-94062-C-3-B)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 525.2: The following sample was prepared outside of preparation holding time due to the samples being login past hold time.
: Outfall004_20170218_Comp (440-177392-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND	BU	1.1	0.53	ug/L		02/20/17 12:41	02/21/17 21:00	1
Diazinon	ND	BU	0.27	0.13	ug/L		02/20/17 12:41	02/21/17 21:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	98		70 - 130				02/20/17 12:41	02/21/17 21:00	1
Perylene-d12	102		70 - 130				02/20/17 12:41	02/21/17 21:00	1
Triphenylphosphate	128		70 - 130				02/20/17 12:41	02/21/17 21:00	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Acenaphthylene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Anthracene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Benzidine	ND	LR	10.6	5.29	ug/L		02/25/17 09:17	02/28/17 15:07	1
Benzo[a]anthracene	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
Benzo[b]fluoranthene	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
Benzo[k]fluoranthene	ND		0.529	0.265	ug/L		02/25/17 09:17	02/28/17 15:07	1
Benzo[a]pyrene	ND		2.12	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Bis(2-chloroethoxy)methane	ND	LR	0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Bis(2-chloroethyl)ether	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Bis(2-ethylhexyl) phthalate	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
4-Bromophenyl phenyl ether	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Butyl benzyl phthalate	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
4-Chloro-3-methylphenol	ND		2.12	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
2-Chloronaphthalene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
2-Chlorophenol	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
4-Chlorophenyl phenyl ether	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Chrysene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Dibenz(a,h)anthracene	ND		0.529	0.265	ug/L		02/25/17 09:17	02/28/17 15:07	1
Di-n-butyl phthalate	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
1,2-Dichlorobenzene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
1,3-Dichlorobenzene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
1,4-Dichlorobenzene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
3,3'-Dichlorobenzidine	ND	LR	5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
2,4-Dichlorophenol	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
Diethyl phthalate	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
2,4-Dimethylphenol	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
Dimethyl phthalate	ND		0.529	0.265	ug/L		02/25/17 09:17	02/28/17 15:07	1
4,6-Dinitro-2-methylphenol	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
2,4-Dinitrophenol	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
2,4-Dinitrotoluene	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
2,6-Dinitrotoluene	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
Di-n-octyl phthalate	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Fluoranthene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Fluorene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Hexachlorobenzene	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Hexachlorobutadiene	ND		2.12	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Hexachloroethane	ND		3.17	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
Indeno[1,2,3-cd]pyrene	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
Isophorone	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Naphthalene	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Nitrobenzene	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
2-Nitrophenol	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
4-Nitrophenol	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
N-Nitrosodimethylamine	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
N-Nitrosodiphenylamine	ND	LR	1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
N-Nitrosodi-n-propylamine	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
Pentachlorophenol	ND		2.12	1.06	ug/L		02/25/17 09:17	02/28/17 15:07	1
Phenanthrene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
Phenol	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Pyrene	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1
1,2,4-Trichlorobenzene	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
2,4,6-Trichlorophenol	ND		1.06	0.529	ug/L		02/25/17 09:17	02/28/17 15:07	1
Benzo[g,h,i]perylene	ND		5.29	2.12	ug/L		02/25/17 09:17	02/28/17 15:07	1
bis (2-chloroisopropyl) ether	ND		0.529	0.212	ug/L		02/25/17 09:17	02/28/17 15:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	67		50 - 120	02/21/17 09:15	02/24/17 13:04	1
2-Fluorobiphenyl	63		50 - 120	02/25/17 09:17	02/28/17 15:07	1
2-Fluorophenol	65		30 - 120	02/21/17 09:15	02/24/17 13:04	1
2-Fluorophenol	59		30 - 120	02/25/17 09:17	02/28/17 15:07	1
2,4,6-Tribromophenol	73		40 - 120	02/21/17 09:15	02/24/17 13:04	1
2,4,6-Tribromophenol	71		40 - 120	02/25/17 09:17	02/28/17 15:07	1
Nitrobenzene-d5	68		45 - 120	02/21/17 09:15	02/24/17 13:04	1
Nitrobenzene-d5	62		45 - 120	02/25/17 09:17	02/28/17 15:07	1
Terphenyl-d14	68		37 - 144	02/21/17 09:15	02/24/17 13:04	1
Terphenyl-d14	56		37 - 144	02/25/17 09:17	02/28/17 15:07	1
Phenol-d6	57		35 - 120	02/21/17 09:15	02/24/17 13:04	1
Phenol-d6	36		35 - 120	02/25/17 09:17	02/28/17 15:07	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1
Aroclor 1221	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1
Aroclor 1232	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1
Aroclor 1242	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1
Aroclor 1248	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1
Aroclor 1254	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1
Aroclor 1260	ND		0.53	0.26	ug/L		02/21/17 06:54	02/22/17 23:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	63		29 - 115	02/21/17 06:54	02/22/17 23:32	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0053	0.0016	ug/L		02/21/17 06:54	02/23/17 02:03	1
alpha-BHC	ND		0.0053	0.0026	ug/L		02/21/17 06:54	02/23/17 02:03	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	ND		0.011	0.0042	ug/L		02/21/17 06:54	02/23/17 02:03	1
Chlordane (technical)	ND		0.11	0.085	ug/L		02/21/17 06:54	02/23/17 02:03	1
delta-BHC	ND		0.0053	0.0037	ug/L		02/21/17 06:54	02/23/17 02:03	1
Dieldrin	ND		0.0053	0.0021	ug/L		02/21/17 06:54	02/23/17 02:03	1
Endosulfan I	ND		0.0053	0.0032	ug/L		02/21/17 06:54	02/23/17 02:03	1
Endosulfan II	ND		0.0053	0.0021	ug/L		02/21/17 06:54	02/23/17 02:03	1
Endosulfan sulfate	ND		0.011	0.0032	ug/L		02/21/17 06:54	02/23/17 02:03	1
Endrin	ND		0.0053	0.0021	ug/L		02/21/17 06:54	02/23/17 02:03	1
Endrin aldehyde	ND		0.011	0.0021	ug/L		02/21/17 06:54	02/23/17 02:03	1
gamma-BHC (Lindane)	ND		0.011	0.0032	ug/L		02/21/17 06:54	02/23/17 02:03	1
Heptachlor	ND		0.011	0.0032	ug/L		02/21/17 06:54	02/23/17 02:03	1
Heptachlor epoxide	ND		0.0053	0.0026	ug/L		02/21/17 06:54	02/23/17 02:03	1
Toxaphene	ND		0.53	0.26	ug/L		02/21/17 06:54	02/23/17 02:03	1
4,4'-DDD	ND		0.0053	0.0042	ug/L		02/21/17 06:54	02/23/17 02:03	1
4,4'-DDE	ND		0.0053	0.0032	ug/L		02/21/17 06:54	02/23/17 02:03	1
4,4'-DDT	ND		0.011	0.0042	ug/L		02/21/17 06:54	02/23/17 02:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	35		10 - 150	02/21/17 06:54	02/23/17 02:03	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			02/19/17 07:55	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.6		0.50	0.25	mg/L			02/20/17 08:13	1
Fluoride	ND		0.50	0.25	mg/L			02/20/17 08:13	1
Sulfate	3.0		0.50	0.25	mg/L			02/20/17 08:13	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/23/17 11:25	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.63		0.15	0.070	mg/L			03/03/17 11:13	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000011	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
1,2,3,7,8-PeCDD	0.00000040	J,DX q MB	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
1,2,3,7,8-PeCDF	0.00000028	J,DX q MB	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
2,3,4,7,8-PeCDF	0.00000033	J,DX	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
1,2,3,4,7,8-HxCDD	0.00000047	J,DX MB	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
1,2,3,6,7,8-HxCDD	0.0000014	J,DX q MB	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	0.0000011	J,DX MB	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
				5					
1,2,3,4,7,8-HxCDF	0.00000087	J,DX MB	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
				5					
1,2,3,6,7,8-HxCDF	0.0000016	J,DX MB	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
				4					
1,2,3,7,8,9-HxCDF	0.00000019	J,DX	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
				1					
2,3,4,6,7,8-HxCDF	0.0000011	J,DX q	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
				1					
1,2,3,4,6,7,8-HpCDD	0.000035	J,DX MB	0.000055	0.0000007	ug/L		02/28/17 11:35	03/03/17 02:55	1
				6					
1,2,3,4,6,7,8-HpCDF	0.000028	J,DX MB	0.000055	0.0000003	ug/L		02/28/17 11:35	03/03/17 02:55	1
				7					
1,2,3,4,7,8,9-HpCDF	0.00000046	J,DX q MB	0.000055	0.0000004	ug/L		02/28/17 11:35	03/03/17 02:55	1
				7					
OCDD	0.00044	MB	0.00011	0.0000017	ug/L		02/28/17 11:35	03/03/17 02:55	1
OCDF	0.000021	J,DX MB	0.00011	0.0000003	ug/L		02/28/17 11:35	03/03/17 02:55	1
				9					
Total TCDD	ND		0.000011	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
				7					
Total TCDF	0.00000053	J,DX q MB	0.000011	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
				1					
Total PeCDD	0.00000080	J,DX q MB	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
				3					
Total PeCDF	0.0000045	J,DX q MB	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
				4					
Total HxCDD	0.000011	J,DX q MB	0.000055	0.0000001	ug/L		02/28/17 11:35	03/03/17 02:55	1
				7					
Total HxCDF	0.000021	J,DX q MB	0.000055	0.0000002	ug/L		02/28/17 11:35	03/03/17 02:55	1
				2					
Total HpCDD	0.000076	MB	0.000055	0.0000007	ug/L		02/28/17 11:35	03/03/17 02:55	1
				6					
Total HpCDF	0.000040	J,DX q MB	0.000055	0.0000004	ug/L		02/28/17 11:35	03/03/17 02:55	1
				2					

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	72		25 - 164	02/28/17 11:35	03/03/17 02:55	1
13C-2,3,7,8-TCDF	76		24 - 169	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,7,8-PeCDD	72		25 - 181	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,7,8-PeCDF	71		24 - 185	02/28/17 11:35	03/03/17 02:55	1
13C-2,3,4,7,8-PeCDF	81		21 - 178	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,6,7,8-HxCDD	85		28 - 130	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,4,7,8-HxCDF	84		26 - 152	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,7,8,9-HxCDF	78		29 - 147	02/28/17 11:35	03/03/17 02:55	1
13C-2,3,4,6,7,8-HxCDF	84		28 - 136	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,4,6,7,8-HpCDD	93		23 - 140	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,4,6,7,8-HpCDF	95		28 - 143	02/28/17 11:35	03/03/17 02:55	1
13C-1,2,3,4,7,8,9-HpCDF	102		26 - 138	02/28/17 11:35	03/03/17 02:55	1
13C-OCDD	99		17 - 157	02/28/17 11:35	03/03/17 02:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	02/28/17 11:35	03/03/17 02:55	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000011	0.000006	ug/L		02/28/17 11:35	03/03/17 21:52	1
7									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	89		24 - 169				02/28/17 11:35	03/03/17 21:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	80		35 - 197				02/28/17 11:35	03/03/17 21:52	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.033	J,DX	0.050	0.0044	mg/L		02/23/17 07:40	02/24/17 14:21	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:52	1
Copper	3.3		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:52	1
Lead	1.1		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:52	1
Antimony	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:52	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:52	1
Thallium	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:52	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:25	02/28/17 18:27	1

Method: SM 2340B - Hardness, Calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	25		1.3	0.18	mg/L			02/28/17 12:11	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	25		0.33	0.17	mg/L			03/07/17 12:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	68		10	5.0	mg/L			02/23/17 08:39	1
Total Suspended Solids	12		2.5	1.3	mg/L			02/24/17 14:53	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Client Sample ID: Outfall004_20170218_Comp_F

Lab Sample ID: 440-177392-2

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.034	J,DX	0.050	0.0044	mg/L		02/24/17 07:40	02/24/17 18:52	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		03/01/17 09:47	03/01/17 21:22	1
Copper	2.6	QP	2.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:22	1
Lead	ND	QP	1.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:22	1
Antimony	ND	QP	2.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:22	1
Selenium	ND	QP	2.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:22	1
Thallium	ND	QP	1.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:22	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp_F

Lab Sample ID: 440-177392-2

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		03/02/17 22:41	03/03/17 17:02	1

Method: SM 2340B - Hardness, Calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	24		1.3	0.18	mg/L			02/28/17 15:04	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL DEN
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Hardness, Calculation	SM	TAL DEN
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
Asbestos 100.2	EPA 100.2 Asbestos in Drinking Water	NONE	LA Testing
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			935 mL	1 mL	389319	02/20/17 12:41	IVA	TAL IRV
Total/NA	Analysis	525.2		1			389525	02/21/17 21:00	MF	TAL IRV
Total/NA	Prep	625			910 mL	2 mL	389492	02/21/17 09:15	BMN	TAL IRV
Total/NA	Analysis	625		1			390358	02/24/17 13:04	DF	TAL IRV
Total/NA	Prep	625			945 mL	2 mL	390550	02/25/17 09:17	JC1	TAL IRV
Total/NA	Analysis	625		1			390988	02/28/17 15:07	DF	TAL IRV
Total/NA	Prep	608			945 mL	2 mL	389220	02/21/17 06:54	L2A	TAL IRV
Total/NA	Analysis	608 PCB LL		1			389945	02/22/17 23:32	JM	TAL IRV
Total/NA	Prep	608			945 mL	2 mL	389220	02/21/17 06:54	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			389885	02/23/17 02:03	KS	TAL IRV
Total/NA	Analysis	218.6		1			389136	02/19/17 07:55	MN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389207	02/20/17 08:13	NN	TAL IRV
Total/NA	Analysis	314.0		1			390046	02/23/17 11:25	NN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391860	03/03/17 11:13	TLN	TAL IRV
Total/NA	Prep	1613B			902.9 mL	20 uL	152449	02/28/17 11:35	GLB	TAL SAC
Total/NA	Analysis	1613B		1			152940	03/03/17 02:55	SMA	TAL SAC
Total/NA	Prep	1613B	RA		902.9 mL	20 uL	152449	02/28/17 11:35	GLB	TAL SAC
Total/NA	Analysis	1613B	RA	1			153336	03/03/17 21:52	ALM	TAL SAC
Total Recoverable	Prep	200.7			50 mL	50 mL	362945	02/23/17 07:40	SUR	TAL DEN
Total Recoverable	Analysis	200.7 Rev 4.4		1			363424	02/24/17 14:21	SJS	TAL DEN
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:52	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390898	02/27/17 20:25	DB	TAL IRV
Total/NA	Analysis	245.1		1			391217	02/28/17 18:27	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			392463	03/07/17 12:07	A1S	TAL IRV
Total/NA	Analysis	SM 2340B		1			363765	02/28/17 12:11	CML	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	400 mL	1000 mL	390447	02/24/17 14:53	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 17:59	SN	TAL IRV

Client Sample ID: Outfall004_20170218_Comp_F

Lab Sample ID: 440-177392-2

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			100 mL	100 mL	362960	02/21/17 22:13	SEJ	TAL DEN
Dissolved	Prep	200.7			50 mL	50 mL	363011	02/24/17 07:40	SUR	TAL DEN
Dissolved	Analysis	200.7 Rev 4.4		1			363489	02/24/17 18:52	CML	TAL DEN
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	391309	03/01/17 09:47	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			391549	03/01/17 21:22	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Client Sample ID: Outfall004_20170218_Comp_F

Lab Sample ID: 440-177392-2

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	245.1			20 mL	20 mL	391751	03/02/17 22:41	DB	TAL IRV
Dissolved	Analysis	245.1		1			391968	03/03/17 17:02	DB	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	362960	02/21/17 22:13	SEJ	TAL DEN
Dissolved	Analysis	SM 2340B		1			363795	02/28/17 15:04	DEG	TAL DEN

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-389319/1-A
Matrix: Water
Analysis Batch: 389525

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389319

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		02/20/17 12:41	02/21/17 18:14	1
Diazinon	ND		0.25	0.12	ug/L		02/20/17 12:41	02/21/17 18:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	104		70 - 130	02/20/17 12:41	02/21/17 18:14	1
Perylene-d12	98		70 - 130	02/20/17 12:41	02/21/17 18:14	1
Triphenylphosphate	104		70 - 130	02/20/17 12:41	02/21/17 18:14	1

Lab Sample ID: LCS 440-389319/2-A
Matrix: Water
Analysis Batch: 389525

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389319

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	5.28		ug/L		106	70 - 130
Diazinon	5.00	4.43		ug/L		89	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	93		70 - 130
Perylene-d12	100		70 - 130
Triphenylphosphate	108		70 - 130

Lab Sample ID: LCSD 440-389319/3-A
Matrix: Water
Analysis Batch: 389525

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389319

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	5.11		ug/L		102	70 - 130	3	30
Diazinon	5.00	4.46		ug/L		89	70 - 130	1	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	101		70 - 130
Perylene-d12	99		70 - 130
Triphenylphosphate	111		70 - 130

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-389492/1-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389492

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Acenaphthylene	0.3115	J,DX	0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Anthracene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Benzidine	ND		10.0	5.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-389492/1-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389492

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		02/21/17 09:15	02/24/17 10:41	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
2-Chlorophenol	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Chrysene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		02/21/17 09:15	02/24/17 10:41	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Diethyl phthalate	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		02/21/17 09:15	02/24/17 10:41	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Fluoranthene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Fluorene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Hexachloroethane	ND		3.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Isophorone	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Naphthalene	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Nitrobenzene	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
2-Nitrophenol	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
4-Nitrophenol	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Pentachlorophenol	ND		2.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Phenanthrene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1
Phenol	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Pyrene	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-389492/1-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389492

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		02/21/17 09:15	02/24/17 10:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	69		50 - 120	02/21/17 09:15	02/24/17 10:41	1
2-Fluorophenol	59		30 - 120	02/21/17 09:15	02/24/17 10:41	1
2,4,6-Tribromophenol	72		40 - 120	02/21/17 09:15	02/24/17 10:41	1
Nitrobenzene-d5	65		45 - 120	02/21/17 09:15	02/24/17 10:41	1
Terphenyl-d14	87		37 - 144	02/21/17 09:15	02/24/17 10:41	1
Phenol-d6	53		35 - 120	02/21/17 09:15	02/24/17 10:41	1

Lab Sample ID: LCS 440-389492/2-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	6.771		ug/L		68	47 - 145
Acenaphthylene	10.0	6.609		ug/L		66	33 - 145
Anthracene	10.0	6.748		ug/L		67	27 - 133
Benzidine	10.0	ND		ug/L		43	5 - 66
Benzo[a]anthracene	10.0	6.773		ug/L		68	33 - 143
Benzo[b]fluoranthene	10.0	6.883		ug/L		69	24 - 150
Benzo[k]fluoranthene	10.0	7.141		ug/L		71	11 - 150
Benzo[a]pyrene	10.0	7.026		ug/L		70	17 - 150
Bis(2-chloroethoxy)methane	10.0	6.574		ug/L		66	33 - 150
Bis(2-chloroethyl)ether	10.0	6.020		ug/L		60	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	7.099		ug/L		71	10 - 150
4-Bromophenyl phenyl ether	10.0	7.125		ug/L		71	53 - 127
Butyl benzyl phthalate	10.0	6.979		ug/L		70	10 - 150
4-Chloro-3-methylphenol	10.0	6.868		ug/L		69	22 - 147
2-Chloronaphthalene	10.0	5.840	LR	ug/L		58	60 - 118
2-Chlorophenol	10.0	6.164		ug/L		62	23 - 134
4-Chlorophenyl phenyl ether	10.0	7.459		ug/L		75	25 - 150
Chrysene	10.0	6.847		ug/L		68	17 - 150
Dibenz(a,h)anthracene	10.0	8.463		ug/L		85	10 - 150
Di-n-butyl phthalate	10.0	7.159		ug/L		72	10 - 118
1,2-Dichlorobenzene	10.0	5.651		ug/L		57	32 - 129
1,3-Dichlorobenzene	10.0	5.391		ug/L		54	10 - 150
1,4-Dichlorobenzene	10.0	5.406		ug/L		54	20 - 124
3,3'-Dichlorobenzidine	10.0	6.142		ug/L		61	10 - 150
2,4-Dichlorophenol	10.0	6.515		ug/L		65	39 - 135
Diethyl phthalate	10.0	7.485		ug/L		75	10 - 114
2,4-Dimethylphenol	10.0	5.372		ug/L		54	32 - 119
Dimethyl phthalate	10.0	7.466		ug/L		75	10 - 112
4,6-Dinitro-2-methylphenol	20.0	13.98		ug/L		70	10 - 150
2,4-Dinitrophenol	20.0	13.25		ug/L		66	50 - 150

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-389492/2-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrotoluene	10.0	7.348		ug/L		73	39 - 139
2,6-Dinitrotoluene	10.0	7.447		ug/L		74	50 - 150
Di-n-octyl phthalate	10.0	7.366		ug/L		74	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	6.894		ug/L		68	47 - 116
Fluoranthene	10.0	7.309		ug/L		73	26 - 137
Fluorene	10.0	7.402		ug/L		74	59 - 121
Hexachlorobenzene	10.0	6.785		ug/L		68	10 - 150
Hexachlorobutadiene	10.0	4.867		ug/L		49	24 - 116
Hexachloroethane	10.0	5.038		ug/L		50	40 - 113
Hexachlorocyclopentadiene	10.0	2.271	J,DX	ug/L		23	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	8.847		ug/L		88	10 - 150
Isophorone	10.0	7.356		ug/L		74	21 - 150
Naphthalene	10.0	6.130		ug/L		61	21 - 133
Nitrobenzene	10.0	6.182		ug/L		62	35 - 150
2-Nitrophenol	10.0	6.506		ug/L		65	29 - 150
4-Nitrophenol	20.0	13.48		ug/L		67	10 - 132
N-Nitrosodimethylamine	10.0	5.768		ug/L		58	26 - 117
N-Nitrosodiphenylamine	10.0	6.629		ug/L		66	54 - 110
N-Nitrosodi-n-propylamine	10.0	6.427		ug/L		64	10 - 150
Pentachlorophenol	20.0	10.70		ug/L		53	14 - 150
Phenanthrene	10.0	7.016		ug/L		70	54 - 120
Phenol	10.0	5.622		ug/L		56	10 - 112
Pyrene	10.0	6.916		ug/L		69	52 - 115
1,2,4-Trichlorobenzene	10.0	5.986		ug/L		60	44 - 142
2,4,6-Trichlorophenol	10.0	6.596		ug/L		66	37 - 144
Benzo[g,h,i]perylene	10.0	10.02		ug/L		100	10 - 150
bis (2-chloroisopropyl) ether	10.0	5.930		ug/L		59	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	67		50 - 120
2-Fluorophenol	60		30 - 120
2,4,6-Tribromophenol	82		40 - 120
Nitrobenzene-d5	67		45 - 120
Terphenyl-d14	76		37 - 144
Phenol-d6	65		35 - 120

Lab Sample ID: 440-177394-J-1-A MS
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389492

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		10.9	7.392		ug/L		68	47 - 145
Acenaphthylene	ND		10.9	7.669		ug/L		71	33 - 145
Anthracene	ND		10.9	6.336		ug/L		58	27 - 133
Benzidine	ND		10.9	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		10.9	6.101		ug/L		56	33 - 143
Benzo[b]fluoranthene	ND		10.9	6.075		ug/L		56	24 - 150

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-J-1-A MS

Matrix: Water

Analysis Batch: 390358

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 389492

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Benzo[k]fluoranthene	ND		10.9	6.252		ug/L		58	11 - 150
Benzo[a]pyrene	ND		10.9	6.068		ug/L		56	17 - 150
Bis(2-chloroethoxy)methane	ND		10.9	7.426		ug/L		68	33 - 150
Bis(2-chloroethyl)ether	ND		10.9	6.912		ug/L		64	12 - 150
Bis(2-ethylhexyl) phthalate	ND		10.9	6.790		ug/L		62	10 - 150
4-Bromophenyl phenyl ether	ND		10.9	7.596		ug/L		70	53 - 127
Butyl benzyl phthalate	ND		10.9	7.204		ug/L		66	10 - 150
4-Chloro-3-methylphenol	ND		10.9	8.123		ug/L		75	22 - 147
2-Chloronaphthalene	ND	LR	10.9	6.526		ug/L		60	60 - 118
2-Chlorophenol	ND		10.9	6.868		ug/L		63	23 - 134
4-Chlorophenyl phenyl ether	ND		10.9	8.205		ug/L		75	25 - 150
Chrysene	ND		10.9	6.163		ug/L		57	17 - 150
Dibenz(a,h)anthracene	ND		10.9	5.659		ug/L		52	10 - 150
Di-n-butyl phthalate	ND		10.9	7.566		ug/L		70	10 - 118
1,2-Dichlorobenzene	ND		10.9	6.662		ug/L		61	32 - 129
1,3-Dichlorobenzene	ND		10.9	6.439		ug/L		59	10 - 150
1,4-Dichlorobenzene	ND		10.9	6.534		ug/L		60	20 - 124
3,3'-Dichlorobenzidine	ND		10.9	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		10.9	7.169		ug/L		66	39 - 135
Diethyl phthalate	ND		10.9	8.276		ug/L		76	10 - 114
2,4-Dimethylphenol	ND		10.9	6.718		ug/L		62	32 - 119
Dimethyl phthalate	ND		10.9	8.219		ug/L		76	10 - 112
4,6-Dinitro-2-methylphenol	ND		21.7	15.45		ug/L		71	10 - 150
2,4-Dinitrophenol	ND		21.7	15.27		ug/L		70	50 - 150
2,4-Dinitrotoluene	ND		10.9	8.345		ug/L		77	39 - 139
2,6-Dinitrotoluene	ND		10.9	8.535		ug/L		79	50 - 150
Di-n-octyl phthalate	ND		10.9	6.030		ug/L		55	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		11.0	7.436		ug/L		68	60 - 120
Fluoranthene	ND		10.9	7.367		ug/L		68	26 - 137
Fluorene	ND		10.9	8.171		ug/L		75	59 - 121
Hexachlorobenzene	ND		10.9	6.686		ug/L		62	10 - 150
Hexachlorobutadiene	ND		10.9	6.301		ug/L		58	24 - 116
Hexachloroethane	ND		10.9	6.257		ug/L		58	40 - 113
Hexachlorocyclopentadiene	ND		10.9	4.220	J,DX	ug/L		39	25 - 120
Indeno[1,2,3-cd]pyrene	ND		10.9	5.758		ug/L		53	10 - 150
Isophorone	ND		10.9	8.231		ug/L		76	21 - 150
Naphthalene	ND		10.9	7.271		ug/L		67	21 - 133
Nitrobenzene	ND		10.9	7.199		ug/L		66	35 - 150
2-Nitrophenol	ND		10.9	7.608		ug/L		70	29 - 150
4-Nitrophenol	ND		21.7	16.13		ug/L		74	10 - 132
N-Nitrosodimethylamine	ND		10.9	7.057		ug/L		65	12 - 123
N-Nitrosodiphenylamine	ND		10.9	4.212	LN	ug/L		39	60 - 120
N-Nitrosodi-n-propylamine	ND		10.9	7.329		ug/L		67	10 - 150
Pentachlorophenol	ND		21.7	14.78		ug/L		68	14 - 150
Phenanthrene	ND		10.9	7.449		ug/L		69	54 - 120
Phenol	ND		10.9	6.060		ug/L		56	10 - 112
Pyrene	ND		10.9	6.774		ug/L		62	52 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-J-1-A MS

Matrix: Water

Analysis Batch: 390358

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 389492

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
1,2,4-Trichlorobenzene	ND		10.9	7.145		ug/L		66	44 - 142
2,4,6-Trichlorophenol	ND		10.9	7.659		ug/L		70	37 - 144
Benzo[g,h,i]perylene	ND		10.9	5.924		ug/L		55	10 - 150
bis (2-chloroisopropyl) ether	ND		10.9	6.764		ug/L		62	45 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	65		50 - 120
2-Fluorophenol	62		30 - 120
2,4,6-Tribromophenol	80		40 - 120
Nitrobenzene-d5	69		45 - 120
Terphenyl-d14	61		37 - 144
Phenol-d6	62		35 - 120

Lab Sample ID: MB 440-390550/1-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 390550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Acenaphthylene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Anthracene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Benzidine	ND		10.0	5.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		02/25/17 09:17	02/28/17 11:32	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
2-Chlorophenol	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Chrysene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		02/25/17 09:17	02/28/17 11:32	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Diethyl phthalate	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		02/25/17 09:17	02/28/17 11:32	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-390550/1-A
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Fluoranthene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Fluorene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Hexachloroethane	ND		3.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Isophorone	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Naphthalene	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Nitrobenzene	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
2-Nitrophenol	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
4-Nitrophenol	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Pentachlorophenol	ND		2.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Phenanthrene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
Phenol	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Pyrene	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		02/25/17 09:17	02/28/17 11:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	62		50 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorophenol	58		30 - 120	02/25/17 09:17	02/28/17 11:32	1
2,4,6-Tribromophenol	76		40 - 120	02/25/17 09:17	02/28/17 11:32	1
Nitrobenzene-d5	60		45 - 120	02/25/17 09:17	02/28/17 11:32	1
Terphenyl-d14	84		37 - 144	02/25/17 09:17	02/28/17 11:32	1
Phenol-d6	53		35 - 120	02/25/17 09:17	02/28/17 11:32	1

Lab Sample ID: LCS 440-390550/2-A
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	7.485		ug/L		75	47 - 145
Acenaphthylene	10.0	4.723		ug/L		47	33 - 145
Anthracene	10.0	7.735		ug/L		77	27 - 133
Benzidine	10.0	ND	LR	ug/L		0	5 - 66
Benzo[a]anthracene	10.0	7.896		ug/L		79	33 - 143
Benzo[b]fluoranthene	10.0	7.963		ug/L		80	24 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-390550/2-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[k]fluoranthene	10.0	8.051		ug/L		81	11 - 150
Benzo[a]pyrene	10.0	6.517		ug/L		65	17 - 150
Bis(2-chloroethoxy)methane	10.0	1.700	LR	ug/L		17	33 - 150
Bis(2-chloroethyl)ether	10.0	6.899		ug/L		69	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.366		ug/L		84	10 - 150
4-Bromophenyl phenyl ether	10.0	8.215		ug/L		82	53 - 127
Butyl benzyl phthalate	10.0	6.672		ug/L		67	10 - 150
4-Chloro-3-methylphenol	10.0	7.966		ug/L		80	22 - 147
2-Chloronaphthalene	10.0	6.922		ug/L		69	60 - 118
2-Chlorophenol	10.0	6.878		ug/L		69	23 - 134
4-Chlorophenyl phenyl ether	10.0	8.196		ug/L		82	25 - 150
Chrysene	10.0	7.807		ug/L		78	17 - 150
Dibenz(a,h)anthracene	10.0	9.992		ug/L		100	10 - 150
Di-n-butyl phthalate	10.0	8.464		ug/L		85	10 - 118
1,2-Dichlorobenzene	10.0	6.549		ug/L		65	32 - 129
1,3-Dichlorobenzene	10.0	6.263		ug/L		63	10 - 150
1,4-Dichlorobenzene	10.0	6.329		ug/L		63	20 - 124
3,3'-Dichlorobenzidine	10.0	ND	LR	ug/L		0	10 - 150
2,4-Dichlorophenol	10.0	7.712		ug/L		77	39 - 135
Diethyl phthalate	10.0	7.839		ug/L		78	10 - 114
2,4-Dimethylphenol	10.0	7.226		ug/L		72	32 - 119
Dimethyl phthalate	10.0	7.895		ug/L		79	10 - 112
4,6-Dinitro-2-methylphenol	20.0	15.55		ug/L		78	10 - 150
2,4-Dinitrophenol	20.0	14.93		ug/L		75	50 - 150
2,4-Dinitrotoluene	10.0	7.838		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.0	7.915		ug/L		79	50 - 150
Di-n-octyl phthalate	10.0	8.710		ug/L		87	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	5.926		ug/L		59	47 - 116
Fluoranthene	10.0	8.712		ug/L		87	26 - 137
Fluorene	10.0	8.031		ug/L		80	59 - 121
Hexachlorobenzene	10.0	7.920		ug/L		79	10 - 150
Hexachlorobutadiene	10.0	6.410		ug/L		64	24 - 116
Hexachloroethane	10.0	6.128		ug/L		61	40 - 113
Hexachlorocyclopentadiene	10.0	3.818	J,DX	ug/L		38	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	9.492		ug/L		95	10 - 150
Isophorone	10.0	8.623		ug/L		86	21 - 150
Naphthalene	10.0	6.944		ug/L		69	21 - 133
Nitrobenzene	10.0	7.011		ug/L		70	35 - 150
2-Nitrophenol	10.0	7.508		ug/L		75	29 - 150
4-Nitrophenol	20.0	15.32		ug/L		77	10 - 132
N-Nitrosodimethylamine	10.0	6.704		ug/L		67	26 - 117
N-Nitrosodiphenylamine	10.0	5.194	LR	ug/L		52	54 - 110
N-Nitrosodi-n-propylamine	10.0	7.375		ug/L		74	10 - 150
Pentachlorophenol	20.0	15.14		ug/L		76	14 - 150
Phenanthrene	10.0	8.041		ug/L		80	54 - 120
Phenol	10.0	6.218		ug/L		62	10 - 112
Pyrene	10.0	7.475		ug/L		75	52 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-390550/2-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,4-Trichlorobenzene	10.0	6.895		ug/L		69	44 - 142
2,4,6-Trichlorophenol	10.0	7.592		ug/L		76	37 - 144
Benzo[g,h,i]perylene	10.0	11.16		ug/L		112	10 - 150
bis (2-chloroisopropyl) ether	10.0	6.506		ug/L		65	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	63		30 - 120
2,4,6-Tribromophenol	84		40 - 120
Nitrobenzene-d5	69		45 - 120
Terphenyl-d14	80		37 - 144
Phenol-d6	61		35 - 120

Lab Sample ID: 440-177394-K-1-A MS

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	ND		10.4	7.250		ug/L		70	47 - 145
Acenaphthylene	ND		10.4	6.835		ug/L		66	33 - 145
Anthracene	ND		10.4	5.374		ug/L		52	27 - 133
Benzidine	ND	LR	10.4	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		10.4	3.926	J,DX	ug/L		38	33 - 143
Benzo[b]fluoranthene	ND		10.4	3.198		ug/L		31	24 - 150
Benzo[k]fluoranthene	ND		10.4	3.323		ug/L		32	11 - 150
Benzo[a]pyrene	ND		10.4	3.043		ug/L		29	17 - 150
Bis(2-chloroethoxy)methane	ND	LR	10.4	7.166		ug/L		69	33 - 150
Bis(2-chloroethyl)ether	ND		10.4	6.845		ug/L		66	12 - 150
Bis(2-ethylhexyl) phthalate	ND		10.4	3.066	J,DX	ug/L		29	10 - 150
4-Bromophenyl phenyl ether	ND		10.4	7.234		ug/L		69	53 - 127
Butyl benzyl phthalate	ND		10.4	6.508		ug/L		62	10 - 150
4-Chloro-3-methylphenol	ND		10.4	7.697		ug/L		74	22 - 147
2-Chloronaphthalene	ND		10.4	6.902		ug/L		66	60 - 118
2-Chlorophenol	ND		10.4	6.754		ug/L		65	23 - 134
4-Chlorophenyl phenyl ether	ND		10.4	7.739		ug/L		74	25 - 150
Chrysene	ND		10.4	3.747		ug/L		36	17 - 150
Dibenz(a,h)anthracene	ND		10.4	3.062		ug/L		29	10 - 150
Di-n-butyl phthalate	ND		10.4	7.225		ug/L		69	10 - 118
1,2-Dichlorobenzene	ND		10.4	6.559		ug/L		63	32 - 129
1,3-Dichlorobenzene	ND		10.4	6.387		ug/L		61	10 - 150
1,4-Dichlorobenzene	ND		10.4	6.434		ug/L		62	20 - 124
3,3'-Dichlorobenzidine	ND	LR	10.4	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		10.4	7.451		ug/L		72	39 - 135
Diethyl phthalate	ND		10.4	7.665		ug/L		74	10 - 114
2,4-Dimethylphenol	ND		10.4	6.728		ug/L		65	32 - 119
Dimethyl phthalate	ND		10.4	7.506		ug/L		72	10 - 112
4,6-Dinitro-2-methylphenol	ND		20.8	14.80		ug/L		71	10 - 150
2,4-Dinitrophenol	ND		20.8	13.42		ug/L		64	50 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-K-1-A MS

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4-Dinitrotoluene	ND		10.4	7.760		ug/L		74	39 - 139
2,6-Dinitrotoluene	ND		10.4	7.791		ug/L		75	50 - 150
Di-n-octyl phthalate	ND		10.4	3.000	J,DX	ug/L		29	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.5	6.933		ug/L		66	60 - 120
Fluoranthene	ND		10.4	6.548		ug/L		63	26 - 137
Fluorene	ND		10.4	7.682		ug/L		74	59 - 121
Hexachlorobenzene	ND		10.4	5.867		ug/L		56	10 - 150
Hexachlorobutadiene	ND		10.4	6.374		ug/L		61	24 - 116
Hexachloroethane	ND		10.4	6.214		ug/L		60	40 - 113
Hexachlorocyclopentadiene	ND		10.4	4.262	J,DX	ug/L		41	25 - 120
Indeno[1,2,3-cd]pyrene	ND		10.4	3.116		ug/L		30	10 - 150
Isophorone	ND		10.4	8.331		ug/L		80	21 - 150
Naphthalene	ND		10.4	6.869		ug/L		66	21 - 133
Nitrobenzene	ND		10.4	6.929		ug/L		67	35 - 150
2-Nitrophenol	ND		10.4	7.475		ug/L		72	29 - 150
4-Nitrophenol	ND		20.8	15.88		ug/L		76	10 - 132
N-Nitrosodimethylamine	ND		10.4	6.515		ug/L		63	12 - 123
N-Nitrosodiphenylamine	ND	LR	10.4	3.016	LN	ug/L		29	60 - 120
N-Nitrosodi-n-propylamine	ND		10.4	7.089		ug/L		68	10 - 150
Pentachlorophenol	ND		20.8	15.07		ug/L		72	14 - 150
Phenanthrene	ND		10.4	7.277		ug/L		70	54 - 120
Phenol	ND		10.4	6.082		ug/L		58	10 - 112
Pyrene	ND		10.4	5.891		ug/L		57	52 - 115
1,2,4-Trichlorobenzene	ND		10.4	6.910		ug/L		66	44 - 142
2,4,6-Trichlorophenol	ND		10.4	7.480		ug/L		72	37 - 144
Benzo[g,h,i]perylene	ND		10.4	3.338	J,DX	ug/L		32	10 - 150
bis (2-chloroisopropyl) ether	ND		10.4	6.431		ug/L		62	45 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	59		30 - 120
2,4,6-Tribromophenol	75		40 - 120
Nitrobenzene-d5	64		45 - 120
Terphenyl-d14	30	LG	37 - 144
Phenol-d6	60		35 - 120

Lab Sample ID: 440-177394-K-1-B MSD

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Acenaphthene	ND		9.76	6.832		ug/L		70	47 - 145	6	25
Acenaphthylene	ND		9.76	6.298		ug/L		65	33 - 145	8	25
Anthracene	ND		9.76	5.252		ug/L		54	27 - 133	2	25
Benzidine	ND	LR	9.76	ND	LN	ug/L		0	30 - 160	NC	35
Benzo[a]anthracene	ND		9.76	4.289	J,DX	ug/L		44	33 - 143	9	20
Benzo[b]fluoranthene	ND		9.76	3.644		ug/L		37	24 - 150	13	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-K-1-B MSD

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Benzo[k]fluoranthene	ND		9.76	3.998		ug/L		41	11 - 150	18	30
Benzo[a]pyrene	ND		9.76	3.422		ug/L		35	17 - 150	12	25
Bis(2-chloroethoxy)methane	ND	LR	9.76	6.454		ug/L		66	33 - 150	10	25
Bis(2-chloroethyl)ether	ND		9.76	6.361		ug/L		65	12 - 150	7	25
Bis(2-ethylhexyl) phthalate	ND		9.76	3.659	J,DX	ug/L		38	10 - 150	18	25
4-Bromophenyl phenyl ether	ND		9.76	7.074		ug/L		73	53 - 127	2	25
Butyl benzyl phthalate	ND		9.76	6.180		ug/L		63	10 - 150	5	25
4-Chloro-3-methylphenol	ND		9.76	7.482		ug/L		77	22 - 147	3	25
2-Chloronaphthalene	ND		9.76	6.389		ug/L		65	60 - 118	8	20
2-Chlorophenol	ND		9.76	6.408		ug/L		66	23 - 134	5	25
4-Chlorophenyl phenyl ether	ND		9.76	7.365		ug/L		75	25 - 150	5	25
Chrysene	ND		9.76	4.280		ug/L		44	17 - 150	13	25
Dibenz(a,h)anthracene	ND		9.76	3.818		ug/L		39	10 - 150	22	30
Di-n-butyl phthalate	ND		9.76	6.826		ug/L		70	10 - 118	6	25
1,2-Dichlorobenzene	ND		9.76	6.091		ug/L		62	32 - 129	7	25
1,3-Dichlorobenzene	ND		9.76	5.919		ug/L		61	10 - 150	8	25
1,4-Dichlorobenzene	ND		9.76	5.904		ug/L		61	20 - 124	9	25
3,3'-Dichlorobenzidine	ND	LR	9.76	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		9.76	6.860		ug/L		70	39 - 135	8	25
Diethyl phthalate	ND		9.76	7.193		ug/L		74	10 - 114	6	30
2,4-Dimethylphenol	ND		9.76	6.466		ug/L		66	32 - 119	4	25
Dimethyl phthalate	ND		9.76	7.179		ug/L		74	10 - 112	4	30
4,6-Dinitro-2-methylphenol	ND		19.5	13.86		ug/L		71	10 - 150	7	25
2,4-Dinitrophenol	ND		19.5	12.95		ug/L		66	50 - 150	4	25
2,4-Dinitrotoluene	ND		9.76	7.266		ug/L		74	39 - 139	7	25
2,6-Dinitrotoluene	ND		9.76	7.335		ug/L		75	50 - 150	6	20
Di-n-octyl phthalate	ND		9.76	3.645	J,DX	ug/L		37	10 - 146	19	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.85	4.522	LN BA	ug/L		46	60 - 120	42	25
Fluoranthene	ND		9.76	6.580		ug/L		67	26 - 137	0	25
Fluorene	ND		9.76	7.243		ug/L		74	59 - 121	6	25
Hexachlorobenzene	ND		9.76	5.917		ug/L		61	10 - 150	1	25
Hexachlorobutadiene	ND		9.76	5.775		ug/L		59	24 - 116	10	25
Hexachloroethane	ND		9.76	5.747		ug/L		59	40 - 113	8	25
Hexachlorocyclopentadiene	ND		9.76	3.777	J,DX	ug/L		39	25 - 120	12	30
Indeno[1,2,3-cd]pyrene	ND		9.76	3.536		ug/L		36	10 - 150	13	30
Isophorone	ND		9.76	7.804		ug/L		80	21 - 150	7	25
Naphthalene	ND		9.76	6.410		ug/L		66	21 - 133	7	25
Nitrobenzene	ND		9.76	6.561		ug/L		67	35 - 150	5	25
2-Nitrophenol	ND		9.76	6.751		ug/L		69	29 - 150	10	25
4-Nitrophenol	ND		19.5	14.48		ug/L		74	10 - 132	9	30
N-Nitrosodimethylamine	ND		9.76	6.496		ug/L		67	12 - 123	0	35
N-Nitrosodiphenylamine	ND	LR	9.76	2.216	LN BA	ug/L		23	60 - 120	31	25
N-Nitrosodi-n-propylamine	ND		9.76	6.595		ug/L		68	10 - 150	7	25
Pentachlorophenol	ND		19.5	14.08		ug/L		72	14 - 150	7	25
Phenanthrene	ND		9.76	6.948		ug/L		71	54 - 120	5	25
Phenol	ND		9.76	5.480		ug/L		56	10 - 112	10	25
Pyrene	ND		9.76	5.910		ug/L		61	52 - 115	0	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-K-1-B MSD

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene	ND		9.76	6.315		ug/L		65	44 - 142	9	20
2,4,6-Trichlorophenol	ND		9.76	6.996		ug/L		72	37 - 144	7	30
Benzo[g,h,i]perylene	ND		9.76	4.038	J,DX	ug/L		41	10 - 150	19	30
bis (2-chloroisopropyl) ether	ND		9.76	5.984		ug/L		61	45 - 120	7	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	57		30 - 120
2,4,6-Tribromophenol	73		40 - 120
Nitrobenzene-d5	64		45 - 120
Terphenyl-d14	36	LG	37 - 144
Phenol-d6	60		35 - 120

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-389220/1-A

Matrix: Water

Analysis Batch: 389306

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389220

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1
Aroclor 1221	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1
Aroclor 1232	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1
Aroclor 1242	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1
Aroclor 1248	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1
Aroclor 1254	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1
Aroclor 1260	ND		0.50	0.25	ug/L		02/20/17 07:21	02/20/17 16:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	77		29 - 115	02/20/17 07:21	02/20/17 16:00	1

Lab Sample ID: LCS 440-389220/2-A

Matrix: Water

Analysis Batch: 389306

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	3.17		ug/L		79	50 - 115
Aroclor 1260	4.00	3.13		ug/L		78	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	85		29 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: LCSD 440-389220/3-A
Matrix: Water
Analysis Batch: 389306

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Aroclor 1016	4.00	3.25		ug/L		81	50 - 115	3	30
Aroclor 1260	4.00	3.48		ug/L		87	10 - 127	11	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	94		29 - 115

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-389220/1-A
Matrix: Water
Analysis Batch: 390125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389220

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		02/20/17 07:21	02/23/17 17:11	1
alpha-BHC	ND		0.0050	0.0025	ug/L		02/20/17 07:21	02/23/17 17:11	1
beta-BHC	ND		0.010	0.0040	ug/L		02/20/17 07:21	02/23/17 17:11	1
Chlordane (technical)	ND		0.10	0.080	ug/L		02/20/17 07:21	02/23/17 17:11	1
delta-BHC	ND		0.0050	0.0035	ug/L		02/20/17 07:21	02/23/17 17:11	1
Dieldrin	ND		0.0050	0.0020	ug/L		02/20/17 07:21	02/23/17 17:11	1
Endosulfan I	ND		0.0050	0.0030	ug/L		02/20/17 07:21	02/23/17 17:11	1
Endosulfan II	ND		0.0050	0.0020	ug/L		02/20/17 07:21	02/23/17 17:11	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		02/20/17 07:21	02/23/17 17:11	1
Endrin	ND		0.0050	0.0020	ug/L		02/20/17 07:21	02/23/17 17:11	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		02/20/17 07:21	02/23/17 17:11	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		02/20/17 07:21	02/23/17 17:11	1
Heptachlor	ND		0.010	0.0030	ug/L		02/20/17 07:21	02/23/17 17:11	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		02/20/17 07:21	02/23/17 17:11	1
Toxaphene	ND		0.50	0.25	ug/L		02/20/17 07:21	02/23/17 17:11	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		02/20/17 07:21	02/23/17 17:11	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		02/20/17 07:21	02/23/17 17:11	1
4,4'-DDT	ND		0.010	0.0040	ug/L		02/20/17 07:21	02/23/17 17:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	43		10 - 150	02/20/17 07:21	02/23/17 17:11	1

Lab Sample ID: LCS 440-389220/5-A
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.200	0.116	PI	ug/L		58	42 - 122
alpha-BHC	0.200	0.131	PI	ug/L		66	37 - 134
beta-BHC	0.200	0.129	PI	ug/L		64	17 - 147
delta-BHC	0.200	0.141		ug/L		71	19 - 140
Dieldrin	0.200	0.146	PI	ug/L		73	36 - 146
Endosulfan I	0.200	0.140	PI	ug/L		70	45 - 150
Endosulfan II	0.200	0.149	PI	ug/L		74	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-389220/5-A
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Endosulfan sulfate	0.200	0.151	PI	ug/L		75	26 - 144	
Endrin	0.200	0.153	PI	ug/L		77	30 - 147	
Endrin aldehyde	0.200	0.167		ug/L		84	47 - 115	
gamma-BHC (Lindane)	0.200	0.135	PI	ug/L		67	32 - 127	
Heptachlor	0.200	0.143		ug/L		71	34 - 115	
Heptachlor epoxide	0.200	0.143	PI	ug/L		71	37 - 142	
4,4'-DDD	0.200	0.143	PI	ug/L		72	31 - 141	
4,4'-DDE	0.200	0.139	PI	ug/L		69	30 - 145	
4,4'-DDT	0.200	0.167	PI	ug/L		83	25 - 150	
LCS LCS								
Surrogate	%Recovery	Qualifier	Limits					
Tetrachloro-m-xylene	58	PI	10 - 150					

Lab Sample ID: 440-177394-H-1-A MSD
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. RPD		Limit
									Limits	RPD	
Aldrin	ND		0.194	0.148		ug/L		76	35 - 120	9	30
alpha-BHC	ND		0.194	0.144		ug/L		74	40 - 120	12	30
beta-BHC	ND		0.194	0.143		ug/L		74	50 - 120	13	30
delta-BHC	ND		0.194	0.160		ug/L		82	50 - 120	7	30
Dieldrin	ND		0.194	0.172		ug/L		88	50 - 120	3	30
Endosulfan I	ND		0.194	0.172		ug/L		89	50 - 120	7	30
Endosulfan II	ND		0.194	0.161		ug/L		83	50 - 125	11	30
Endosulfan sulfate	ND		0.194	0.157		ug/L		81	55 - 125	7	30
Endrin	ND		0.194	0.174		ug/L		90	50 - 120	7	30
Endrin aldehyde	ND		0.194	0.166		ug/L		86	45 - 125	10	30
gamma-BHC (Lindane)	ND		0.194	0.151		ug/L		78	40 - 120	11	30
Heptachlor	ND		0.194	0.159		ug/L		82	40 - 120	14	30
Heptachlor epoxide	ND		0.194	0.170		ug/L		87	50 - 120	7	30
4,4'-DDD	ND		0.194	0.166		ug/L		85	50 - 125	9	30
4,4'-DDE	ND		0.194	0.158		ug/L		81	45 - 125	7	30
4,4'-DDT	ND		0.194	0.176		ug/L		91	50 - 125	11	30
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	65		10 - 150								

Lab Sample ID: 440-177394-I-1-A MS
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
Aldrin	ND		0.207	0.162		ug/L		78	35 - 120	
alpha-BHC	ND		0.207	0.163		ug/L		78	40 - 120	
beta-BHC	ND		0.207	0.162		ug/L		78	50 - 120	
delta-BHC	ND		0.207	0.172		ug/L		83	50 - 120	
Dieldrin	ND		0.207	0.177		ug/L		86	50 - 120	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-177394-I-1-A MS
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389220
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Endosulfan I	ND		0.207	0.185		ug/L		89	50 - 120
Endosulfan II	ND		0.207	0.180		ug/L		87	50 - 125
Endosulfan sulfate	ND		0.207	0.169		ug/L		82	55 - 125
Endrin	ND		0.207	0.191		ug/L		92	50 - 120
Endrin aldehyde	ND		0.207	0.183		ug/L		88	45 - 125
gamma-BHC (Lindane)	ND		0.207	0.169		ug/L		82	40 - 120
Heptachlor	ND		0.207	0.183		ug/L		88	40 - 120
Heptachlor epoxide	ND		0.207	0.182		ug/L		88	50 - 120
4,4'-DDD	ND		0.207	0.181		ug/L		87	50 - 125
4,4'-DDE	ND		0.207	0.168		ug/L		81	45 - 125
4,4'-DDT	ND		0.207	0.197		ug/L		95	50 - 125
		MS	MS						
Surrogate		%Recovery	Qualifier	Limits					
Tetrachloro-m-xylene		72		10 - 150					

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-389136/8
Matrix: Water
Analysis Batch: 389136

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			02/19/17 07:12	1

Lab Sample ID: LCS 440-389136/7
Matrix: Water
Analysis Batch: 389136

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chromium, hexavalent	50.0	52.0		ug/L		104	90 - 110

Lab Sample ID: MRL 440-389136/9
Matrix: Water
Analysis Batch: 389136

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	Limits
Chromium, hexavalent	1.00	0.807	J,DX	ug/L		81	50 - 150

Lab Sample ID: 440-177392-1 MS
Matrix: Water
Analysis Batch: 389136

Client Sample ID: Outfall004_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Chromium, hexavalent	ND		50.0	50.9		ug/L		102	90 - 110

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: 440-177392-1 MSD
Matrix: Water
Analysis Batch: 389136

Client Sample ID: Outfall004_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND		50.0	50.8		ug/L		102	90 - 110	0	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389207/3
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/20/17 07:21	1
Fluoride	ND		0.50	0.25	mg/L			02/20/17 07:21	1
Sulfate	ND		0.50	0.25	mg/L			02/20/17 07:21	1

Lab Sample ID: LCS 440-389207/2
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.45		mg/L		109	90 - 110
Fluoride	5.00	4.63		mg/L		93	90 - 110
Sulfate	5.00	5.13		mg/L		103	90 - 110

Lab Sample ID: 440-177394-A-1 MS
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	8.2		5.00	13.5		mg/L		106	80 - 120
Fluoride	ND		5.00	4.64		mg/L		93	80 - 120

Lab Sample ID: 440-177394-A-1 MSD
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	8.2		5.00	13.7		mg/L		111	80 - 120	2	20
Fluoride	ND		5.00	4.75		mg/L		95	80 - 120	2	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-390046/3
Matrix: Water
Analysis Batch: 390046

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/23/17 08:58	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: LCS 440-390046/2
Matrix: Water
Analysis Batch: 390046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	24.0		ug/L		96	85 - 115

Lab Sample ID: MRL 440-390046/5
Matrix: Water
Analysis Batch: 390046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.80	J,DX	ug/L		95	75 - 125

Lab Sample ID: 440-177728-A-1 MS
Matrix: Water
Analysis Batch: 390046

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	24.4		ug/L		98	80 - 120

Lab Sample ID: 440-177728-A-1 MSD
Matrix: Water
Analysis Batch: 390046

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	24.3		ug/L		97	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8-PeCDD	0.000000560	J,DX	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8-PeCDF	0.000000447	J,DX q	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,7,8-HxCDD	0.000000537	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,6,7,8-HxCDD	0.000000475	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8,9-HxCDD	0.000000479	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,7,8-HxCDF	0.000000494	J,DX q	0.000050	0.0000003	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,6,7,8-HxCDF	0.000000507	J,DX	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,6,7,8-HpCDD	0.000000905	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,6,7,8-HpCDF	0.000000697	J,DX q	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,7,8,9-HpCDF	0.000000482	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
OCDD	0.00000493	J,DX q	0.00010	0.0000003	ug/L		02/28/17 08:19	03/02/17 12:28	1
OCDF	0.00000275	J,DX	0.00010	0.0000003	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total TCDD	0.000000234	J,DX q	0.000010	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total TCDF	0.000000361	J,DX	0.000010	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total PeCDD	0.000000560	J,DX	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total PeCDF	0.000000447	J,DX q	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total HxCDD	0.00000149	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total HxCDF	0.00000100	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total HpCDD	0.00000217	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
Total HpCDF	0.00000118	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	56		25 - 164	02/28/17 08:19	03/02/17 12:28	1
13C-2,3,7,8-TCDF	57		24 - 169	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,7,8-PeCDF	52		24 - 185	02/28/17 08:19	03/02/17 12:28	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	02/28/17 08:19	03/02/17 12:28	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,7,8,9-HpCDF	64		26 - 138	02/28/17 08:19	03/02/17 12:28	1
13C-OCDD	58		17 - 157	02/28/17 08:19	03/02/17 12:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	02/28/17 08:19	03/02/17 12:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-152449/2-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000215		ug/L		107	67 - 158
2,3,7,8-TCDF	0.000200	0.000222	MB	ug/L		111	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00107	MB	ug/L		107	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00112	MB	ug/L		112	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00106		ug/L		106	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100	MB	ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108	MB	ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000931	MB	ug/L		93	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00103	MB	ug/L		103	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00111	MB	ug/L		111	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00112		ug/L		112	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00114		ug/L		114	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00109	MB	ug/L		109	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00101	MB	ug/L		101	78 - 138
OCDD	0.00200	0.00209	MB	ug/L		105	78 - 144
OCDF	0.00200	0.00220	MB	ug/L		110	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	55		20 - 175
13C-2,3,7,8-TCDF	56		22 - 152
13C-1,2,3,7,8-PeCDD	56		21 - 227
13C-1,2,3,7,8-PeCDF	56		21 - 192
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	66		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	69		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	70		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	72		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	97		31 - 191

Lab Sample ID: LCSD 320-152449/3-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158	7	50
2,3,7,8-TCDF	0.000200	0.000214	MB	ug/L		107	75 - 158	4	50
1,2,3,7,8-PeCDD	0.00100	0.00105	MB	ug/L		105	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00108	MB	ug/L		108	80 - 134	3	50
2,3,4,7,8-PeCDF	0.00100	0.000985		ug/L		99	68 - 160	7	50

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152449/3-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000949	MB	ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00104	MB	ug/L		104	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000972	MB	ug/L		97	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000993	MB	ug/L		99	72 - 134	4	50
1,2,3,6,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	84 - 130	8	50
1,2,3,7,8,9-HxCDF	0.00100	0.00105		ug/L		105	78 - 130	6	50
2,3,4,6,7,8-HxCDF	0.00100	0.00109		ug/L		109	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00103	MB	ug/L		103	70 - 140	6	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00100	MB	ug/L		100	82 - 122	7	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000963	MB	ug/L		96	78 - 138	5	50
OCDD	0.00200	0.00196	MB	ug/L		98	78 - 144	7	50
OCDF	0.00200	0.00208	MB	ug/L		104	63 - 170	6	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	55		20 - 175
13C-2,3,7,8-TCDF	54		22 - 152
13C-1,2,3,7,8-PeCDD	57		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,6,7,8-HxCDD	59		25 - 163
13C-1,2,3,4,7,8-HxCDF	58		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	55		17 - 205
13C-2,3,4,6,7,8-HxCDF	58		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	60		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	62		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	67		20 - 186
13C-OCDD	64		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	90		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 153336

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000007	ug/L		02/28/17 08:19	03/03/17 14:18	1

Isotope Dilution	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF - RA	66		24 - 169	02/28/17 08:19	03/03/17 14:18	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA (Continued)

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 153336

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD - RA	86		35 - 197	02/28/17 08:19	03/03/17 14:18	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 280-362945/1-A
Matrix: Water
Analysis Batch: 363424

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.050	0.0044	mg/L		02/23/17 07:40	02/24/17 14:11	1

Lab Sample ID: LCS 280-362945/2-A
Matrix: Water
Analysis Batch: 363308

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	50.0	52.5		mg/L		105	90 - 111
Magnesium	50.0	53.5		mg/L		107	90 - 113

Lab Sample ID: LCS 280-362945/2-A
Matrix: Water
Analysis Batch: 363424

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	1.02		mg/L		102	86 - 110

Lab Sample ID: 280-94062-B-1-E MS
Matrix: Water
Analysis Batch: 363308

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	33		50.0	82.2		mg/L		99	70 - 130
Magnesium	17		50.0	69.4		mg/L		106	70 - 130

Lab Sample ID: 280-94062-B-1-E MS
Matrix: Water
Analysis Batch: 363424

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.028	J,DX	1.00	0.984		mg/L		96	70 - 130

Lab Sample ID: 280-94062-B-1-F MSD
Matrix: Water
Analysis Batch: 363308

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Calcium	33		50.0	86.4		mg/L		108	70 - 130	5	20
Magnesium	17		50.0	71.9		mg/L		111	70 - 130	3	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 280-94062-B-1-F MSD
Matrix: Water
Analysis Batch: 363424

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 362945

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	0.028	J,DX	1.00	0.998		mg/L		97	70 - 130	1	20

Lab Sample ID: MB 280-362960/1-B
Matrix: Water
Analysis Batch: 363489

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 363011

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.050	0.0044	mg/L		02/24/17 07:40	02/24/17 18:41	1

Lab Sample ID: LCS 280-362960/2-B
Matrix: Water
Analysis Batch: 363489

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 363011

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Boron	1.00	0.991		mg/L		99	86 - 110
Calcium	50.0	50.4		mg/L		101	90 - 111
Magnesium	50.0	49.9		mg/L		100	90 - 113

Lab Sample ID: 280-94062-C-3-C MS
Matrix: Water
Analysis Batch: 363489

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 363011

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Boron	0.032	J,DX	1.00	1.04		mg/L		101	70 - 130
Calcium	130		50.0	167		mg/L		78	70 - 130
Magnesium	50	MB	50.0	97.1		mg/L		95	70 - 130

Lab Sample ID: 280-94062-C-3-D MSD
Matrix: Water
Analysis Batch: 363489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 363011

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Boron	0.032	J,DX	1.00	1.02		mg/L		99	70 - 130	2	20
Calcium	130		50.0	170		mg/L		82	70 - 130	1	20
Magnesium	50	MB	50.0	96.2		mg/L		93	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:44	1
Copper	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Lead	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Antimony	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Thallium	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	73.8		ug/L		92	85 - 115
Copper	80.0	75.2		ug/L		94	85 - 115
Lead	80.0	71.8		ug/L		90	85 - 115
Antimony	80.0	74.8		ug/L		93	85 - 115
Selenium	80.0	74.2		ug/L		93	85 - 115
Thallium	80.0	76.2		ug/L		95	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130
Copper	4.1		80.0	79.8		ug/L		95	70 - 130
Lead	1.9		80.0	77.1		ug/L		94	70 - 130
Antimony	ND		80.0	73.7		ug/L		92	70 - 130
Selenium	ND		80.0	72.9		ug/L		91	70 - 130
Thallium	ND		80.0	79.3		ug/L		99	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Cadmium	ND		80.0	75.1	BA	ug/L		94	70 - 130	200	20
Copper	4.1		80.0	77.7	BA	ug/L		92	70 - 130	200	20
Lead	1.9		80.0	75.3	BA	ug/L		92	70 - 130	200	20
Antimony	ND		80.0	68.7	BA	ug/L		86	70 - 130	200	20
Selenium	ND		80.0	72.2	BA	ug/L		90	70 - 130	200	20
Thallium	ND		80.0	77.0	BA	ug/L		96	70 - 130	200	20

Lab Sample ID: MB 440-389636/1-E
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 391309

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 09:47	03/01/17 21:19	1
Copper	ND		2.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:19	1
Lead	ND		1.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:19	1
Antimony	ND		2.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:19	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:19	1
Thallium	ND		1.0	0.50	ug/L		03/01/17 09:47	03/01/17 21:19	1

Lab Sample ID: LCS 440-389636/2-E
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	80.6		ug/L		101	85 - 115
Copper	80.0	82.0		ug/L		103	85 - 115
Lead	80.0	80.4		ug/L		100	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-389636/2-E
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	80.0	82.0		ug/L		102	85 - 115
Selenium	80.0	78.7		ug/L		98	85 - 115
Thallium	80.0	83.3		ug/L		104	85 - 115

Lab Sample ID: 440-177392-2 MS
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Outfall004_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	78.2		ug/L		98	70 - 130
Copper	2.6	QP	80.0	81.9		ug/L		99	70 - 130
Lead	ND	QP	80.0	76.7		ug/L		96	70 - 130
Antimony	ND	QP	80.0	79.6		ug/L		99	70 - 130
Selenium	ND	QP	80.0	76.5		ug/L		96	70 - 130
Thallium	ND	QP	80.0	80.1		ug/L		100	70 - 130

Lab Sample ID: 440-177392-2 MSD
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Outfall004_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	79.8		ug/L		100	70 - 130	2	20
Copper	2.6	QP	80.0	83.1		ug/L		101	70 - 130	1	20
Lead	ND	QP	80.0	78.6		ug/L		98	70 - 130	2	20
Antimony	ND	QP	80.0	80.7		ug/L		101	70 - 130	1	20
Selenium	ND	QP	80.0	77.3		ug/L		97	70 - 130	1	20
Thallium	ND	QP	80.0	82.0		ug/L		102	70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390898/1-A
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390898

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:25	02/28/17 18:14	1

Lab Sample ID: LCS 440-390898/2-A
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390898

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.46		ug/L		106	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-177394-S-1-B MS
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390898

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.12		ug/L		102	70 - 130

Lab Sample ID: 440-177394-S-1-C MSD
Matrix: Water
Analysis Batch: 391217

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390898

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.87		ug/L		98	70 - 130	3	20

Lab Sample ID: MB 440-389636/1-F
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 391751

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/02/17 22:41	03/03/17 16:39	1

Lab Sample ID: LCS 440-389636/2-F
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391751

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.74		ug/L		97	85 - 115

Lab Sample ID: 440-177399-A-3-L MS
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 391751

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	1.1		8.00	7.91		ug/L		86	70 - 130

Lab Sample ID: 440-177399-A-3-M MSD
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 391751

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	1.1		8.00	7.94		ug/L		86	70 - 130	0	20

Method: SM 2340B - Hardness, Calculation

Lab Sample ID: MB 280-363765/1
Matrix: Water
Analysis Batch: 363765

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	ND		1.3	0.18	mg/L			02/28/17 12:11	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: SM 2340B - Hardness, Calculation (Continued)

Lab Sample ID: MB 280-362960/1-A
Matrix: Water
Analysis Batch: 363795

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	ND		1.3	0.18	mg/L			02/28/17 15:04	1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177195-K-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	190		191		mg/L		0.5	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-390447/1
Matrix: Water
Analysis Batch: 390447

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/24/17 14:53	1

Lab Sample ID: LCS 440-390447/2
Matrix: Water
Analysis Batch: 390447

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	984		mg/L		98	85 - 115

Lab Sample ID: 440-177962-B-1 DU
Matrix: Water
Analysis Batch: 390447

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	200		193		mg/L		2	10

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

GC/MS Semi VOA

Prep Batch: 389319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	525.2	
MB 440-389319/1-A	Method Blank	Total/NA	Water	525.2	
LCS 440-389319/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-389319/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	

Prep Batch: 389492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	625	
MB 440-389492/1-A	Method Blank	Total/NA	Water	625	
LCS 440-389492/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-J-1-A MS	Matrix Spike	Total/NA	Water	625	

Analysis Batch: 389525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	525.2	389319
MB 440-389319/1-A	Method Blank	Total/NA	Water	525.2	389319
LCS 440-389319/2-A	Lab Control Sample	Total/NA	Water	525.2	389319
LCSD 440-389319/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	389319

Analysis Batch: 390358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	625	389492
MB 440-389492/1-A	Method Blank	Total/NA	Water	625	389492
LCS 440-389492/2-A	Lab Control Sample	Total/NA	Water	625	389492
440-177394-J-1-A MS	Matrix Spike	Total/NA	Water	625	389492

Prep Batch: 390550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	625	
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 390988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	625	390550
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	390550
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	390550
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	390550
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	390550

GC Semi VOA

Prep Batch: 389220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	608	
MB 440-389220/1-A	Method Blank	Total/NA	Water	608	
LCS 440-389220/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-389220/5-A	Lab Control Sample	Total/NA	Water	608	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

GC Semi VOA (Continued)

Prep Batch: 389220 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS D 440-389220/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608	

Analysis Batch: 389306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389220/1-A	Method Blank	Total/NA	Water	608 PCB LL	389220
LCS 440-389220/2-A	Lab Control Sample	Total/NA	Water	608 PCB LL	389220
LCS D 440-389220/3-A	Lab Control Sample Dup	Total/NA	Water	608 PCB LL	389220

Analysis Batch: 389885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	608 Pesticides	389220
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608 Pesticides	389220
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	389220
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	389220

Analysis Batch: 389945

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	608 PCB LL	389220

Analysis Batch: 390125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389220/1-A	Method Blank	Total/NA	Water	608 Pesticides	389220

HPLC/IC

Analysis Batch: 389136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	218.6	
MB 440-389136/8	Method Blank	Total/NA	Water	218.6	
LCS 440-389136/7	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-389136/9	Lab Control Sample	Total/NA	Water	218.6	
440-177392-1 MS	Outfall004_20170218_Comp	Total/NA	Water	218.6	
440-177392-1 MSD	Outfall004_20170218_Comp	Total/NA	Water	218.6	

Analysis Batch: 389207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	300.0	
MB 440-389207/3	Method Blank	Total/NA	Water	300.0	
LCS 440-389207/2	Lab Control Sample	Total/NA	Water	300.0	
440-177394-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-177394-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 390046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	314.0	
MB 440-390046/3	Method Blank	Total/NA	Water	314.0	
LCS 440-390046/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-390046/5	Lab Control Sample	Total/NA	Water	314.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

HPLC/IC (Continued)

Analysis Batch: 390046 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177728-A-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-177728-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 391860

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	1613B	
440-177392-1 - RA	Outfall004_20170218_Comp	Total/NA	Water	1613B	
MB 320-152449/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-152449/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-152449/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152449/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-152449/1-A	Method Blank	Total/NA	Water	1613B	152449
LCS 320-152449/2-A	Lab Control Sample	Total/NA	Water	1613B	152449
LCSD 320-152449/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152449

Analysis Batch: 152940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	1613B	152449

Analysis Batch: 153336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1 - RA	Outfall004_20170218_Comp	Total/NA	Water	1613B	152449
MB 320-152449/1-A - RA	Method Blank	Total/NA	Water	1613B	152449

Metals

Prep Batch: 362945

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	200.7	
MB 280-362945/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 280-362945/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
280-94062-B-1-E MS	Matrix Spike	Total Recoverable	Water	200.7	
280-94062-B-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7	

Filtration Batch: 362960

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 280-362960/1-A	Method Blank	Dissolved	Water	FILTRATION	
MB 280-362960/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 280-362960/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
280-94062-C-3-C MS	Matrix Spike	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Metals (Continued)

Filtration Batch: 362960 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-94062-C-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 363011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	200.7	362960
MB 280-362960/1-B	Method Blank	Dissolved	Water	200.7	362960
LCS 280-362960/2-B	Lab Control Sample	Dissolved	Water	200.7	362960
280-94062-C-3-C MS	Matrix Spike	Dissolved	Water	200.7	362960
280-94062-C-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.7	362960

Analysis Batch: 363308

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-362945/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	362945
LCS 280-362945/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	362945
280-94062-B-1-E MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	362945
280-94062-B-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	362945

Analysis Batch: 363424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	200.7 Rev 4.4	362945
MB 280-362945/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	362945
LCS 280-362945/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	362945
280-94062-B-1-E MS	Matrix Spike	Total Recoverable	Water	200.7 Rev 4.4	362945
280-94062-B-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.7 Rev 4.4	362945

Analysis Batch: 363489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	200.7 Rev 4.4	363011
MB 280-362960/1-B	Method Blank	Dissolved	Water	200.7 Rev 4.4	363011
LCS 280-362960/2-B	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	363011
280-94062-C-3-C MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	363011
280-94062-C-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	363011

Analysis Batch: 363765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	SM 2340B	
MB 280-363765/1	Method Blank	Total/NA	Water	SM 2340B	

Analysis Batch: 363795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	SM 2340B	362960
MB 280-362960/1-A	Method Blank	Dissolved	Water	SM 2340B	362960

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-E	Method Blank	Dissolved	Water	FILTRATION	
MB 440-389636/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-389636/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177392-2 MS	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Metals (Continued)

Filtration Batch: 389636 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2 MSD	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177399-A-3-L MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177399-A-3-M MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	245.1	
MB 440-390898/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390898/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177394-S-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-177394-S-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 391217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	245.1	390898
MB 440-390898/1-A	Method Blank	Total/NA	Water	245.1	390898
LCS 440-390898/2-A	Lab Control Sample	Total/NA	Water	245.1	390898
440-177394-S-1-B MS	Matrix Spike	Total/NA	Water	245.1	390898
440-177394-S-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	390898

Prep Batch: 391309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-E	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-E	Lab Control Sample	Dissolved	Water	200.2	389636
440-177392-2 MS	Outfall004_20170218_Comp_F	Dissolved	Water	200.2	389636
440-177392-2 MSD	Outfall004_20170218_Comp_F	Dissolved	Water	200.2	389636

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	200.8	391309
MB 440-389636/1-E	Method Blank	Dissolved	Water	200.8	391309
LCS 440-389636/2-E	Lab Control Sample	Dissolved	Water	200.8	391309
440-177392-2 MS	Outfall004_20170218_Comp_F	Dissolved	Water	200.8	391309
440-177392-2 MSD	Outfall004_20170218_Comp_F	Dissolved	Water	200.8	391309

Prep Batch: 391751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	245.1	389636
MB 440-389636/1-F	Method Blank	Dissolved	Water	245.1	389636
LCS 440-389636/2-F	Lab Control Sample	Dissolved	Water	245.1	389636
440-177399-A-3-L MS	Matrix Spike	Dissolved	Water	245.1	389636
440-177399-A-3-M MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	389636

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

Analysis Batch: 391968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	245.1	391751
MB 440-389636/1-F	Method Blank	Dissolved	Water	245.1	391751
LCS 440-389636/2-F	Lab Control Sample	Dissolved	Water	245.1	391751
440-177399-A-3-L MS	Matrix Spike	Dissolved	Water	245.1	391751
440-177399-A-3-M MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	391751

Analysis Batch: 392463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	SM 2340B	

General Chemistry

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177195-K-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 390447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	SM 2540D	
MB 440-390447/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-390447/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177962-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
LR	LCS/LCSD recovery below method control limits
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LG	LG=Surrogate recovery below the acceptance limits
BA	Relative percent difference out of control

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible
BA	Relative percent difference out of control

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
525.2	525.2	Water	Chlorpyrifos
525.2	525.2	Water	Diazinon
608 PCB LL	608	Water	Aroclor 1016
608 PCB LL	608	Water	Aroclor 1221
608 PCB LL	608	Water	Aroclor 1232
608 PCB LL	608	Water	Aroclor 1242
608 PCB LL	608	Water	Aroclor 1248
608 PCB LL	608	Water	Aroclor 1254
608 PCB LL	608	Water	Aroclor 1260
608 Pesticides	608	Water	4,4'-DDD
608 Pesticides	608	Water	4,4'-DDE
608 Pesticides	608	Water	4,4'-DDT
608 Pesticides	608	Water	Aldrin
608 Pesticides	608	Water	alpha-BHC
608 Pesticides	608	Water	beta-BHC
608 Pesticides	608	Water	Chlordane (technical)
608 Pesticides	608	Water	delta-BHC
608 Pesticides	608	Water	Dieldrin
608 Pesticides	608	Water	Endosulfan I
608 Pesticides	608	Water	Endosulfan II
608 Pesticides	608	Water	Endosulfan sulfate
608 Pesticides	608	Water	Endrin
608 Pesticides	608	Water	Endrin aldehyde
608 Pesticides	608	Water	gamma-BHC (Lindane)
608 Pesticides	608	Water	Heptachlor
608 Pesticides	608	Water	Heptachlor epoxide
608 Pesticides	608	Water	Toxaphene
625	625	Water	1,2,4-Trichlorobenzene
625	625	Water	1,2-Dichlorobenzene
625	625	Water	1,2-Diphenylhydrazine(as Azobenzene)
625	625	Water	1,3-Dichlorobenzene
625	625	Water	1,4-Dichlorobenzene
625	625	Water	2,4,6-Trichlorophenol
625	625	Water	2,4-Dichlorophenol
625	625	Water	2,4-Dimethylphenol
625	625	Water	2,4-Dinitrophenol
625	625	Water	2,4-Dinitrotoluene
625	625	Water	2,6-Dinitrotoluene
625	625	Water	2-Chloronaphthalene
625	625	Water	2-Chlorophenol
625	625	Water	2-Nitrophenol
625	625	Water	3,3'-Dichlorobenzidine
625	625	Water	4,6-Dinitro-2-methylphenol
625	625	Water	4-Bromophenyl phenyl ether
625	625	Water	4-Chloro-3-methylphenol
625	625	Water	4-Chlorophenyl phenyl ether

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Laboratory: TestAmerica Irvine (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
625	625	Water	4-Nitrophenol
625	625	Water	Acenaphthene
625	625	Water	Acenaphthylene
625	625	Water	Anthracene
625	625	Water	Benzidine
625	625	Water	Benzo[a]anthracene
625	625	Water	Benzo[a]pyrene
625	625	Water	Benzo[b]fluoranthene
625	625	Water	Benzo[g,h,i]perylene
625	625	Water	Benzo[k]fluoranthene
625	625	Water	bis (2-chloroisopropyl) ether
625	625	Water	Bis(2-chloroethoxy)methane
625	625	Water	Bis(2-chloroethyl)ether
625	625	Water	Bis(2-ethylhexyl) phthalate
625	625	Water	Butyl benzyl phthalate
625	625	Water	Chrysene
625	625	Water	Dibenz(a,h)anthracene
625	625	Water	Diethyl phthalate
625	625	Water	Dimethyl phthalate
625	625	Water	Di-n-butyl phthalate
625	625	Water	Di-n-octyl phthalate
625	625	Water	Fluoranthene
625	625	Water	Fluorene
625	625	Water	Hexachlorobenzene
625	625	Water	Hexachlorobutadiene
625	625	Water	Hexachlorocyclopentadiene
625	625	Water	Hexachloroethane
625	625	Water	Indeno[1,2,3-cd]pyrene
625	625	Water	Isophorone
625	625	Water	Naphthalene
625	625	Water	Nitrobenzene
625	625	Water	N-Nitrosodimethylamine
625	625	Water	N-Nitrosodi-n-propylamine
625	625	Water	N-Nitrosodiphenylamine
625	625	Water	Pentachlorophenol
625	625	Water	Phenanthrene
625	625	Water	Phenol
625	625	Water	Pyrene
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Laboratory: TestAmerica Denver (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-17
California	State Program	9	2513	08-31-16 *
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-17
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	12-01-18 *
Kansas	NELAP	7	E-10166	04-30-17
Louisiana	NELAP	6	02096	06-30-17
Maine	State Program	1	CO0002	03-03-19
Minnesota	NELAP	5	8-999-405	12-31-17 *
Nevada	State Program	9	CO0026	07-31-17
New Hampshire	NELAP	1	205310	04-28-17
New Jersey	NELAP	2	CO004	06-30-17
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-17 *
Oklahoma	State Program	6	8614	08-31-17
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-17
South Carolina	State Program	4	72002001	01-09-17 *
Texas	NELAP	6	T104704183-16-12	09-30-17
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-17
Virginia	NELAP	3	460232	06-14-17
Washington	State Program	10	C583	08-02-17
West Virginia DEP	State Program	3	354	11-30-17
Wisconsin	State Program	5	999615430	08-31-17
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Laboratory: TestAmerica Sacramento (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



LA Testing

520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com> / pasadenalab@latesting.com

LA Testing Order ID: 321703984
Customer ID: TEST72
Customer PO:
Project ID:

Attn: Urvashi Patel
TestAmerica - Irvine, CA
17461 Derian Avenue
Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 260-3297
Collected: 02/18/2017
Received: 02/21/2017
Analyzed: 03/02/2017
Proj: Outfall 004 | 44009879 | 440-107803.1 | 440-177392.1

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm ²)	Area Analyzed (mm ²)	ASBESTOS				
					Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration MFL (million fibers per liter)	Confidence Limits
Outfall 004_20170218_C 321703984-0001	2/21/2017 08:05 PM	5	1288	0.2620	None Detected	ND	0.98	<0.98	0.00 - 3.60

Due to excessive particulate the analytical sensitivity of 0.2 MFL as required by the method was not reached.

Sample ozonated prior to analysis due to lab receipt time exceeding 48hr method hold time.

Analyst(s)
Feng Liang (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 03/02/2017 21:33:01

Sample collection and containers provided by the client, acceptable bottle blank level is defined as ≤0.01MFL>10µm. ND=None Detected. This report relates only to those items tested. This report may not be reproduced, except in full, without written permission by LA Testing. Samples received in good condition unless otherwise noted.

Samples analyzed by LA Testing South Pasadena, CA CA ELAP 2283



March 10, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall004_20170218_Comp (440-177392-1)
DATE RECEIVED: 20 Feb - 17
ABC LAB NO.: TAM0217.249

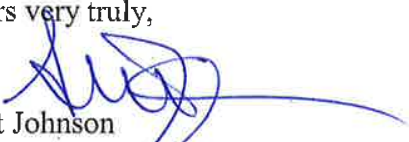
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 24.58 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 09 Mar-17 16:06 (p 1 of 1)
 Test Code: TAM0217.249sel | 07-9801-0924

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID: 06-5930-1829	Test Type: Cell Growth	Analyst:			
Start Date: 21 Feb-17 16:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 11-4806-9030	Code: TAM0217.249s	Client: Test America Irvine			
Sample Date: 18 Feb-17 12:05	Material: Sample Water	Project: outfall 004 44009879			
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report				
Sample Age: 77h (1.5 °C)	Station: Outfall004_20170218_Comp (440-177392-				

Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
03-0576-0490	Cell Density	TST-Welch's t Test	0.4301	100% failed cell density

Test Acceptability		TAC Limits					
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
03-0576-0490	Cell Density	Control CV	0.04859	<<	0.2	Yes	Passes Criteria
03-0576-0490	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.342E+6	1.288E+6	1.397E+6	1.234E+6	1.419E+6	2.306E+4	6.523E+4	4.86%	0.00%
100		8	1.012E+6	9.513E+5	1.073E+6	9.040E+5	1.103E+6	2.584E+4	7.308E+4	7.22%	24.58%

Cell Density Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	N	1.234E+6	1.312E+6	1.267E+6	1.362E+6	1.366E+6	1.380E+6	1.399E+6	1.419E+6	
100		1.000E+6	1.103E+6	1.077E+6	9.970E+5	9.480E+5	9.040E+5	1.097E+6	9.730E+5	

CETIS Analytical Report

Report Date: 09 Mar-17 16:06 (p 1 of 2)

Test Code: TAM0217.249sel | 07-9801-0924

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	03-0576-0490	Endpoint:	Cell Density	CETIS Version:	CETISv1.9.2
Analyzed:	09 Mar-17 16:06	Analysis:	Parametric Bioequivalence-Two Sample	Official Results:	Yes
Batch ID:	06-5930-1829	Test Type:	Cell Growth	Analyst:	
Start Date:	21 Feb-17 16:40	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	25 Feb-17 16:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	11-4806-9030	Code:	TAM0217.249s	Client:	Test America Irvine
Sample Date:	18 Feb-17 12:05	Material:	Sample Water	Project:	outfall 004 44009879
Receipt Date:	20 Feb-17 13:51	Source:	Bioassay Report		
Sample Age:	77h (1.5 °C)	Station:	Outfall004_20170218_Comp (440-177392-		

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% failed cell density

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100	0.1799	0.6955	12	CDF	0.4301	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04859	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.356E+11	4.356E+11	1	90.8	1.7E-07	Significant Effect
Error	6.717E+10	4.798E+09	14			
Total	5.028E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.15	8.862	0.7044	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.1378	8.862	0.7160	Equal Variances
Variances	Variance Ratio F Test	1.255	8.885	0.7721	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.3381	3.878	0.5064	Normal Distribution
Distribution	D'Agostino Skewness Test	0.48	2.576	0.6312	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1153	0.2471	0.9723	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9389	0.8408	0.3359	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.342E+6	1.288E+6	1.397E+6	1.364E+6	1.234E+6	1.419E+6	2.306E+4	4.86%	0.00%
100		8	1.012E+6	9.513E+5	1.073E+6	9.985E+5	9.040E+5	1.103E+6	2.584E+4	7.22%	24.58%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.234E+6	1.312E+6	1.267E+6	1.362E+6	1.366E+6	1.380E+6	1.399E+6	1.419E+6
100		1.000E+6	1.103E+6	1.077E+6	9.970E+5	9.480E+5	9.040E+5	1.097E+6	9.730E+5

CETIS Measurement Report

Report Date: 09 Mar-17 16:06 (p 1 of 2)
 Test Code: TAM0217.249sel | 07-9801-0924

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 06-5930-1829	Test Type: Cell Growth	Analyst:
Start Date: 21 Feb-17 16:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 11-4806-9030	Code: TAM0217.249s	Client: Test America Irvine
Sample Date: 18 Feb-17 12:05	Material: Sample Water	Project: outfall 004 44009879
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report	
Sample Age: 77h (1.5 °C)	Station: Outfall004_20170218_Comp (440-177392-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	66			66	66	0	0	0.0%	0
100		1	38			38	38	0	0	0.0%	0
Overall		2	52	-125.9	229.9	38	66	14	19.8	38.07%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	427	406.2	447.8	408	444	7.497	16.76	3.93%	0
100		5	185.4	175.8	195	175	194	3.458	7.733	4.17%	0
Overall		10	306.2	214.7	397.7	175	444	40.45	127.9	41.78%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	98			98	98	0	0	0.0%	0
100		1	60			60	60	0	0	0.0%	0
Overall		2	79	-162.4	320.4	60	98	19	26.87	34.01%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.66	7.518	7.802	7.5	7.8	0.05099	0.114	1.49%	0
100		5	7.82	7.616	8.024	7.6	8	0.07348	0.1643	2.1%	0
Overall		10	7.74	7.627	7.853	7.5	8	0.04989	0.1578	2.04%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.24	23.93	24.55	24	24.5	0.1122	0.251	1.04%	0
100		5	24.24	23.93	24.55	24	24.5	0.1122	0.251	1.04%	0
Overall		10	24.24	24.07	24.41	24	24.5	0.07483	0.2366	0.98%	0 (0%)

CETIS Measurement Report

Report Date: 09 Mar-17 16:06 (p 2 of 2)
Test Code: TAM0217.249sel | 07-9801-0924

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO₃)-mg/L

Conc-%	Code	1
0	N	66
100		38

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	435	438	444	408	410
100		175	180	188	194	190

Hardness (CaCO₃)-mg/L

Conc-%	Code	1
0	N	98
100		60

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.6	7.7	7.5	7.7	7.8
100		8	7.9	7.9	7.6	7.7

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.2	24	24	24.5	24.5
100		24.2	24	24	24.5	24.5

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 2 February - 2017

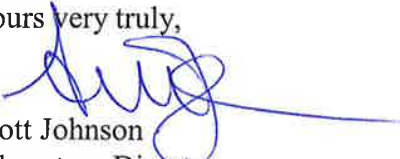
STANDARD TOXICANT: Cadmium Chloride

NOEC = 40.00 ug/l

IC25 = 89.24 ug/l

IC50 = 135.10 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 15 Feb-17 15:17 (p 1 of 1)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:			
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 96h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab			
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-4050-2957	Cell Density	Dunnett Multiple Comparison Test	40	80	56.57		8.64%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
12-8217-0386	Cell Density	Linear Interpolation (ICPIN)	IC5	43.15	n/a	57.97		
			IC10	55.46	12.33	72.05		
			IC15	67.77	41.96	87.44		
			IC20	80.06	59.78	93.4		
			IC25	89.24	74.9	101.6		
			IC40	116.8	104.4	129.1		
			IC50	135.1	123.3	146.7		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-8217-0386	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
20-4050-2957	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
12-8217-0386	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
20-4050-2957	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
20-4050-2957	Cell Density	PMSD	0.08638	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.16%	0.00%
20		4	1.104E+6	9.960E+5	1.213E+6	1.009E+6	1.156E+6	3.408E+4	6.817E+4	6.17%	3.28%
40		4	1.100E+6	9.916E+5	1.207E+6	1.035E+6	1.188E+6	3.390E+4	6.781E+4	6.17%	3.72%
80		4	9.140E+5	8.618E+5	9.662E+5	8.720E+5	9.510E+5	1.641E+4	3.281E+4	3.59%	19.96%
140		4	5.408E+5	4.619E+5	6.196E+5	5.020E+5	6.100E+5	2.479E+4	4.958E+4	9.17%	52.65%
180		4	2.200E+5	1.785E+5	2.615E+5	1.950E+5	2.430E+5	1.303E+4	2.606E+4	11.85%	80.74%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 20-4050-2957	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 14 Feb-17 7:57	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:			
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 96h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab			
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	40	80	56.57		8.64%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	0.9151	2.407	98650	6	CDF	0.4598	Non-Significant Effect
		40	1.037	2.407	98650	6	CDF	0.4056	Non-Significant Effect
		80*	5.564	2.407	98650	6	CDF	9.0E-05	Significant Effect
		140*	14.67	2.407	98650	6	CDF	2.7E-05	Significant Effect
		180*	22.5	2.407	98650	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.08638	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.831E+12	5.663E+11	5	168.6	<1.0E-37	Significant Effect
Error	6.046E+10	3.359E+09	18			
Total	2.892E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.568	15.09	0.4709	Equal Variances
Variances	Levene Equality of Variance Test	1.407	4.248	0.2686	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.086	4.248	0.4011	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.1795	3.878	0.9730	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.2901	2.576	0.7717	Normal Distribution
Distribution	D'Agostino Skewness Test	0.4985	2.576	0.6181	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.3327	9.21	0.8468	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.08134	0.2056	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9787	0.884	0.8706	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.156E+6	1.037E+6	1.219E+6	4.091E+4	7.16%	0.00%
20		4	1.104E+6	9.960E+5	1.213E+6	1.126E+6	1.009E+6	1.156E+6	3.408E+4	6.17%	3.28%
40		4	1.100E+6	9.916E+5	1.207E+6	1.088E+6	1.035E+6	1.188E+6	3.390E+4	6.17%	3.72%
80		4	9.140E+5	8.618E+5	9.662E+5	9.165E+5	8.720E+5	9.510E+5	1.641E+4	3.59%	19.96%
140		4	5.408E+5	4.619E+5	6.196E+5	5.255E+5	5.020E+5	6.100E+5	2.479E+4	9.17%	52.65%
180		4	2.200E+5	1.785E+5	2.615E+5	2.210E+5	1.950E+5	2.430E+5	1.303E+4	11.85%	80.74%

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 2 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

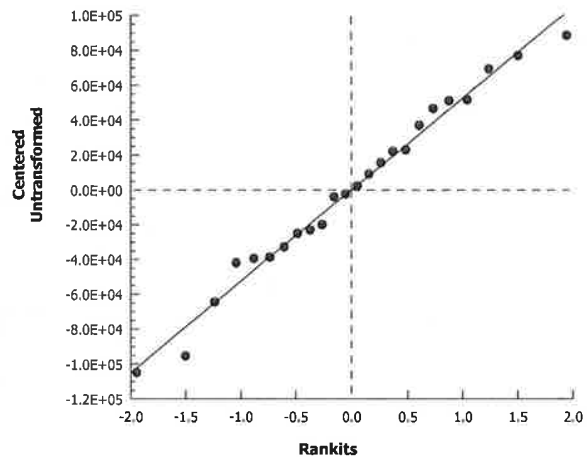
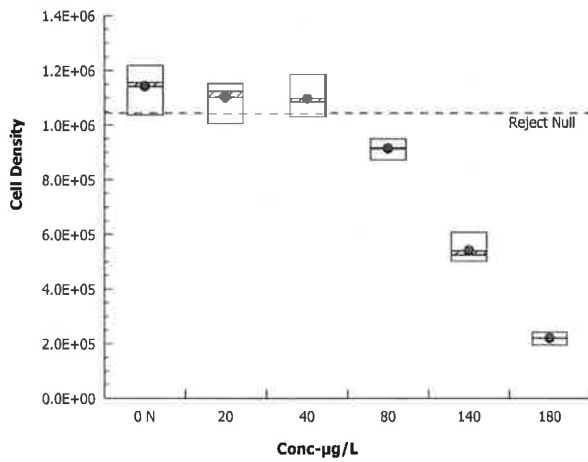
Analysis ID: 20-4050-2957 Endpoint: Cell Density
 Analyzed: 14 Feb-17 7:57 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

Graphics



CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 12-8217-0386	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 14 Feb-17 7:57	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:	
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 96h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab	
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	43.15	n/a	57.97
IC10	55.46	12.33	72.05
IC15	67.77	41.96	87.44
IC20	80.08	59.78	93.4
IC25	89.24	74.9	101.6
IC40	116.8	104.4	129.1
IC50	135.1	123.3	146.7

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.17%	0.0%
20		4	1.104E+6	1.009E+6	1.156E+6	3.408E+4	6.817E+4	6.17%	3.28%
40		4	1.100E+6	1.035E+6	1.188E+6	3.390E+4	6.781E+4	6.17%	3.72%
80		4	9.140E+5	8.720E+5	9.510E+5	1.641E+4	3.281E+4	3.59%	19.96%
140		4	5.408E+5	5.020E+5	6.100E+5	2.479E+4	4.958E+4	9.17%	52.65%
180		4	2.200E+5	1.950E+5	2.430E+5	1.303E+4	2.606E+4	11.85%	80.74%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 2 of 2)
Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

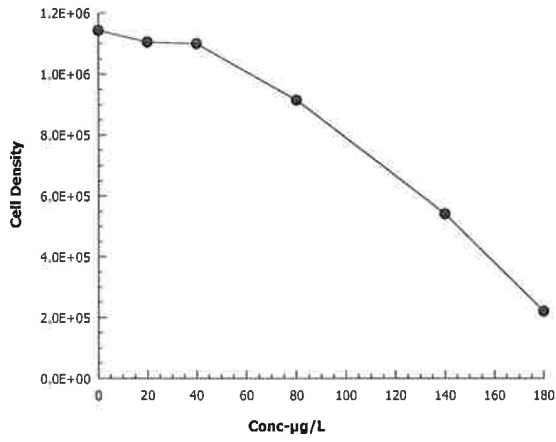
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-8217-0386
Analyzed: 14 Feb-17 7:57

Endpoint: Cell Density
Analysis: Linear Interpolation (ICPIN)

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



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CETIS Measurement Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
20		1	59			59	59	0	0	0.0%	0
40		1	51			51	51	0	0	0.0%	0
80		1	54			54	54	0	0	0.0%	0
140		1	58			58	58	0	0	0.0%	0
180		1	50			50	50	0	0	0.0%	0
Overall		6	56.67	49.72	63.62	50	68	2.704	6.623	11.69%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	432.8	456.4	434	460	4.238	9.476	2.13%	0
20		5	418.2	409.1	427.3	409	429	3.277	7.328	1.75%	0
40		5	413.4	409.1	417.7	410	418	1.536	3.435	0.83%	0
80		5	405.2	400.8	409.6	402	410	1.594	3.564	0.88%	0
140		5	383.8	379.2	388.4	379	388	1.655	3.701	0.96%	0
180		5	366.8	363.4	370.2	364	370	1.241	2.775	0.76%	0
Overall		30	405.3	395.7	415	364	460	4.718	25.84	6.38%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	88			88	88	0	0	0.0%	0
20		1	92			92	92	0	0	0.0%	0
40		1	93			93	93	0	0	0.0%	0
80		1	94			94	94	0	0	0.0%	0
140		1	95			95	95	0	0	0.0%	0
180		1	97			97	97	0	0	0.0%	0
Overall		6	93.17	89.95	96.38	88	97	1.249	3.061	3.29%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.82	7.616	8.024	7.6	8	0.07348	0.1643	2.1%	0
20		5	7.82	7.764	7.876	7.8	7.9	0.02	0.04473	0.57%	0
40		5	7.8	7.799	7.801	7.8	7.8	0	0	0.0%	0
80		5	7.78	7.724	7.836	7.7	7.8	0.02001	0.04473	0.58%	0
140		5	7.74	7.672	7.808	7.7	7.8	0.0245	0.05478	0.71%	0
180		5	7.74	7.672	7.808	7.7	7.8	0.0245	0.05478	0.71%	0
Overall		30	7.783	7.754	7.813	7.6	8	0.01445	0.07915	1.02%	0 (0%)

CETIS Measurement Report

Report Date: 15 Feb-17 15:17 (p 2 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
20		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
40		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
80		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
140		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
180		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		30	24.1	24.08	24.12	24	24.2	0.01174	0.06433	0.27%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	68
20		59
40		51
80		54
140		58
180		50

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	434	442	444	443	460
20		409	415	418	420	429
40		414	410	410	415	418
80		402	403	403	408	410
140		379	381	385	388	386
180		364	364	367	369	370

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	88
20		92
40		93
80		94
140		95
180		97

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	8	7.7	7.9	7.9	7.6
20		7.9	7.8	7.8	7.8	7.8
40		7.8	7.8	7.8	7.8	7.8
80		7.8	7.7	7.8	7.8	7.8
140		7.8	7.7	7.7	7.7	7.8
180		7.8	7.7	7.7	7.7	7.8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24	24.1	24.1	24.1	24.2
20		24	24.1	24.1	24.1	24.2
40		24	24.1	24.1	24.1	24.2
80		24	24.1	24.1	24.1	24.2
140		24	24.1	24.1	24.1	24.2
180		24	24.1	24.1	24.1	24.2

CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p> <p>Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p> <p><small>Test America's services under this CoC shall be performed in accordance with the T&A's within Blanket Service Agreement # 2015-18. *Resubmitted by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories Inc.</small></p>	<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 004 Comp</p>	<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p> <p>Field Manager: Mark Dominick 818-350-7312, 818-599-0702 (cell)</p>	<p>Sample ID: Outfall004_20170218_Comp</p>	<p>Sample Description: Outfall 004</p>	<p>Sampler: Bryan Bengson, Terry Maurer</p>	<p>Sample Matrix: WM</p>	<p>Sampling Date/Time: 2/18/2017 12:05</p>	<p>Container Type: 1 L Glass Amber</p>	<p># of Cont: 2 *</p>	<p>Preservative: None</p>	<p>Bottle #: 175</p>	<p>MS/MSD: No</p>	<p>Priority Pollutants-SVOCs (625) X</p>	<p>Asbestos (EPA100.2) X</p>	<p>Chlorpyrifos, Diazinon (5925.2) X</p>	<p>Cr (V), Total (E218.6) X</p>	<p>Comments: Only at Outfall 008, 009 Extract within 24-Hours of sampling.</p>
<p>ANALYSIS REQUIRED</p>																	
<p>Legend: R = Routine, A = Annual</p>																	
<p>Relinquished By: <i>Patton</i></p>	<p>Date/Time: 2/18/17</p>	<p>Company:</p>	<p>Relinquished By: <i>Bryan Bengson</i></p>	<p>Date/Time: 2/18/17 10:30</p>	<p>Company:</p>	<p>Relinquished By: <i>Patton</i></p>	<p>Date/Time: 2/18/17 10:30</p>	<p>Company:</p>	<p>Received By: <i>Patton</i></p>	<p>Date/Time: 2/18/17 11:00</p>	<p>Received By: <i>Bryan Bengson</i></p>	<p>Date/Time: 2/18/17 10:40</p>	<p>Received By: <i>Patton</i></p>	<p>Date/Time: 2/18/17 10:30</p>	<p>Received By: <i>Patton</i></p>	<p>Date/Time: 2/18/17 10:30</p>	<p>Received By: <i>Patton</i></p>
<p>Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X 48 Hour: _____ 5 Day: _____ Normal: _____</p>																	
<p>Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: _____ X</p>																	



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 008, 010] Outfall 004 Comp</p>		<p>ANALYSIS REQUIRED</p>	
<p>Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Priority Pollutants-SVOCs (825) X</p> <p>Asbestos (EPA100.2) X</p> <p>Chlorpyrifos, Dazathion (825.2) X</p> <p>Cr (VI), Total (E218.8) X</p>	
<p>Sampler: Bryan Benson, Terry Maurer</p>		<p>Sample I.D. Outfall004_20170218_Comp Outfall004_20170218_Comp_Extra</p>		<p>Sample Matrix WM WM WM WM WM</p>	
<p>Container Type 1L Glass Amber 1L Poly 1L Glass Amber 500 ml Poly 1L Glass Amber 1L Glass Amber</p>		<p># of Cont. 2 1 2 1 2 2</p>		<p>Preservative None None HCl None None HCl</p>	
<p>Boils 175 270 275 260 175 275</p>		<p>MS/MSD No No No No No No</p>		<p>Comments Only at Outfall 008, 009 Extract within 24-Hours of sampling. Hold Hold</p>	
<p>Requisitioned By [Signature]</p>		<p>Date/Time 2/18/17</p>		<p>Company [Blank]</p>	
<p>Requisitioned By [Signature]</p>		<p>Date/Time 2/18/17</p>		<p>Company [Blank]</p>	
<p>Requisitioned By [Signature]</p>		<p>Date/Time 2/18/17</p>		<p>Company [Blank]</p>	
<p>Received By [Signature]</p>		<p>Date/Time 2/18/17 11:00</p>		<p>Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> X 48 Hour: _____ 5 Day: _____ Normal: _____</p>	
<p>Received By [Signature]</p>		<p>Date/Time 2/18/17 13:40</p>		<p>Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> X</p>	



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab FM:	440-177392 Chain of Custody
Client Contact		Phone:	E-Mail:	State of Origin: California
Shipping/Receiving		Company: TestAmerica Laboratories, Inc.		
Address:		Accreditations Required (See note): State Program - California		
13715 Rider Trail North,		Due Date Requested: 3/2/2017		
City: Earth City		TAT Requested (days):		
State, Zip: MO, 63045		PO #:		
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		WO #:		
Email:		Project #: 44009879		
Project Name: OUTFALL 004		SSOW#:		
Site:		Sample Date: 2/18/17		
Sample Identification - Client ID (Lab ID)		Sample Time: 12:05 Pacific		
Ourfall004_20170218_Comp (440-177392-1)		Sample Type (C=Comp, G=grab)		
		Preservation Code: Water		
		Matrix (Water, Brackish, On-water, BT-Tissue, AA/)		
		Field Filtered Sample (Yes or No)		
		Perform MS/MSD (Yes or No)		
		900 Evaporation Gross Alpha/Beta		
		901.1 Cs/Fill, Geo, 0 K-40 and Cesium-137		
		903 G/Presep, 21 Radium-226		
		904 G/Presep, 0 Radium-228		
		905 S/90Presep, 7 Strontium-90		
		906 Q/SC, Dist, Susp Tritium		
		A01R_U/Exchrom_Actin Total Uranium		
		Total Number of containers		
		2		
		Boeing SSFL; DO NOT FILTER; use prep date from preservation		
		Special Instructions/Note:		
		Boeing SSFL; DO NOT FILTER; use prep date from preservation		
		M - Hexane		
		N - None		
		O - AsNaO2		
		P - Na2O4S		
		Q - Na2SO3		
		R - NaHSO4		
		S - H2SO4		
		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		A - HCL		
		B - NaOH		
		C - Zn Acetate		
		D - Nitric Acid		
		E - NaHSO4		
		F - MeOH		
		G - Amchlor		
		H - Ascorbic Acid		
		I - Ice		
		J - DI Water		
		K - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
		O - AsNaO2		
		P - Na2O4S		
		Q - Na2SO3		
		R - NaHSO4		
		S - H2SO4		
		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
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		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
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		P - Na2O4S		
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		R - NaHSO4		
		S - H2SO4		
		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
		O - AsNaO2		
		P - Na2O4S		
		Q - Na2SO3		
		R - NaHSO4		
		S - H2SO4		
		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
		O - AsNaO2		
		P - Na2O4S		
		Q - Na2SO3		
		R - NaHSO4		
		S - H2SO4		
		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
		O - AsNaO2		
		P - Na2O4S		
		Q - Na2SO3		
		R - NaHSO4		
		S - H2SO4		
		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		
		M - Hexane		
		N - None		
		O - AsNaO2		
		P - Na2O4S		
		Q - Na2SO3		
		R - NaHSO4		
		S - H2SO4		
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		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
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		T - TSP Dodecalhydrate		
		U - Acetone		
		V - MCAA		
		W - pH 4-5		
		X - EDTA		
		L - EDA		
		Other:		

Chain of Custody Record

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Carrier Tracking No(s): 440-107787-1	
Client Contact: urvasshi.patel@testamericainc.com		E-Mail: urvasshi.patel@testamericainc.com		State of Origin: California	
Shipping/Receiving		Accreditations Required (See note): State Program - California		Job #: 440-177392-1	
Company: TestAmerica Laboratories, Inc.		Due Date Requested: 3/2/2017		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		TAT Requested (days):		Analysis Requested	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		PO #:		Total Number of Containers	
Email:		WO #:		2	
Project Name: OUTFALL 004		Project #: 44009879		Special Instructions/Note: See OAS, Boeing_wlu to zero; Use Boeing glassware	
Site:		SSO/WF:			
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
Outfall004_20170218_Comp (440-177392-1)		2/18/17		X	
<i>Field #3</i>		Sample Time		Perform MS/MSD (Yes or No)	
		12:05 Pacific		X	
		Sample Type (C=Comp, G=grab)		1613B/1613B_Box_Sep_P_Standard List w/ Totals	
		Preservation Code			
		Water			
		Matrix (In-water, In-soil, On-surface, BT=Traces, A=Air)			
		Water			

Field #3

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/instrument being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody abating to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested I, II, III, IV, Other (specify) **Primary Deliverable Rank. 2**

Empty Kit Relinquished by: _____ Date: _____ Time: _____
 Relinquished by: **Vu Sam** Date/Time: **2/20/17 17:00** Company: **TAT**
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Received by: **627.66** Date/Time: **2/21/17 10:00** Company: **TAT**
 Received by: _____ Date/Time: _____ Company: _____
 Received by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: **0.4**
 Δ Yes Δ No
 Cooler Temperature(s) °C and Other Remarks: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/OC Requirements: _____



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-1

Login Number: 177392

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-1

Login Number: 177392

List Number: 2

Creator: Pottruff, Reed W

List Source: TestAmerica Denver

List Creation: 02/21/17 08:19 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	False	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-1

Login Number: 177392

List Number: 5

Creator: True, Joshua A

List Source: TestAmerica Denver

List Creation: 02/28/17 02:53 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-1

Login Number: 177392

List Number: 4

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 04:47 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-177392-1	Outfall004_20170218_Comp		72		76		72		71
440-177392-1 - RA	Outfall004_20170218_Comp				89				
MB 320-152449/1-A	Method Blank		56		57		54		52
MB 320-152449/1-A - RA	Method Blank				66				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-177392-1	Outfall004_20170218_Comp		81		84		85		84
440-177392-1 - RA	Outfall004_20170218_Comp								
MB 320-152449/1-A	Method Blank		62		62		61		58
MB 320-152449/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-177392-1	Outfall004_20170218_Comp		81		78		84	93	
440-177392-1 - RA	Outfall004_20170218_Comp								
MB 320-152449/1-A	Method Blank		55		54		59	57	
MB 320-152449/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-177392-1	Outfall004_20170218_Comp		95		102		99
440-177392-1 - RA	Outfall004_20170218_Comp						
MB 320-152449/1-A	Method Blank		59		64		58
MB 320-152449/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152449/2-A	Lab Control Sample	55	56	56	56	64	69	71	69
LCSD 320-152449/3-A	Lab Control Sample Dup	55	54	57	53	64	63	59	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152449/2-A	Lab Control Sample	66	62	69	70	71	78	72
LCSD 320-152449/3-A	Lab Control Sample Dup	58	55	58	60	62	67	64

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177392-2

Client Project/Site: Routine Outfall 004 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 8:38:47 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 8:38:47 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177392-1	Outfall004_20170218_Comp	Water	02/18/17 12:05	02/18/17 18:40

- 1
- 2
- 3
- 4
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Job ID: 440-177392-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177392-2

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.8° C, 1.9° C, 3.3° C and 3.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall004_20170218_Comp_Extra (440-177392-3). received #3 not listed on coc.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall004_20170218_Comp (440-177392-1)

Method(s) PrecSep_0: Radium 228; Prep Batch 294407

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294407. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-21: Radium 226; Prep Batch 294401

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294401. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: During the barium clean up portion of the into in-growth process a deviation occurred, whereas, following the addition of 10 milliliters sodium sulfate and m-cresol purple, 5 milliliters of sodium chromate was added before the addition of sodium hydroxide. To correct this mistake, three milliliters of sodium hydroxide was added as well as about 1.5 milliliters of sodium chromate. Barium pellets formed in all samples and were moved into in-growth.Outfall004_20170218_Comp (440-177392-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.54		0.776	0.795	3.00	0.944	pCi/L	03/13/17 10:59	03/19/17 20:24	1
Gross Beta	1.81		0.685	0.708	4.00	0.915	pCi/L	03/13/17 10:59	03/19/17 20:24	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	4.49	U	9.23	9.25	20.0	15.7	pCi/L	02/23/17 14:59	02/24/17 14:03	1
Potassium-40	-23.3	U	98.8	98.9		148	pCi/L	02/23/17 14:59	02/24/17 14:03	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0521	U	0.0551	0.0553	1.00	0.0839	pCi/L	02/24/17 10:49	03/20/17 20:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.6		40 - 110					02/24/17 10:49	03/20/17 20:28	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.225	U	0.265	0.265	1.00	0.436	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.6		40 - 110					02/24/17 11:31	03/11/17 14:43	1
Y Carrier	81.9		40 - 110					02/24/17 11:31	03/11/17 14:43	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.236	U	0.225	0.226	3.00	0.365	pCi/L	03/03/17 14:30	03/13/17 10:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.6		40 - 110					03/03/17 14:30	03/13/17 10:32	1
Y Carrier	93.1		40 - 110					03/03/17 14:30	03/13/17 10:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-24.3	U	153	153	500	278	pCi/L	03/17/17 10:22	03/17/17 20:11	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.172	U	0.169	0.169	1.00	0.194	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.3		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/13/17 10:59	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:24	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294386	02/24/17 14:03	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.43 mL	1.0 g	294401	02/24/17 10:49	PJM	TAL SL
Total/NA	Analysis	903.0		1			298257	03/20/17 20:28	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.43 mL	1.0 g	294407	02/24/17 11:31	PJM	TAL SL
Total/NA	Analysis	904.0		1			297297	03/11/17 14:43	RTM	TAL SL
Total/NA	Prep	PrecSep-7			999.58 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:32	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 20:11	ALD	TAL SL
Total/NA	Prep	ExtChrom			499.99 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298141	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-1 DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Outfall004_20170218_Comp
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294401/1-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294401

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1011		0.0693	0.0699	1.00	0.0920	pCi/L	02/24/17 10:49	03/20/17 20:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					02/24/17 10:49	03/20/17 20:28	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294401/2-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.72		1.12	1.00	0.112	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	89.7		40 - 110							

Lab Sample ID: LCSD 160-294401/3-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	11.08		1.15	1.00	0.0841	pCi/L	98	68 - 137	0.16	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294407/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294407

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03249	U	0.238	0.238	1.00	0.431	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	86.7		40 - 110			02/24/17 11:31	03/11/17 14:43	1		
Y Carrier	83.7		40 - 110			02/24/17 11:31	03/11/17 14:43	1		

Lab Sample ID: LCS 160-294407/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	13.59		1.49	1.00	0.394	pCi/L	99	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	89.7		40 - 110						
Y Carrier	86.4		40 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-294407/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.7	13.97		1.51	1.00	0.370	pCi/L	102	56 - 140	0.13	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	90.9		40 - 110
Y Carrier	87.5		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110	03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110	03/03/17 14:30	03/13/17 10:31	1

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Sr Carrier	88.0		40 - 110
Y Carrier	100		40 - 110

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Sr Carrier	80.3		40 - 110
Y Carrier	104		40 - 110

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
Carrier	%Yield	MSD Qualifier	MSD Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A

Matrix: Water

Analysis Batch: 298080

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.2		30 - 110					03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A

Matrix: Water

Analysis Batch: 298121

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	89.4		30 - 110						

Lab Sample ID: 440-177394-A-1-L MS

Matrix: Water

Analysis Batch: 298093

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143
Tracer	MS %Yield	MS Qualifier	Limits								
Uranium-232	63.1		30 - 110								

Lab Sample ID: 440-177394-A-1-M MSD

Matrix: Water

Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146	0.83	1
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1
Tracer	MSD %Yield	MSD Qualifier	Limits										
Uranium-232	81.8		30 - 110										

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-G MS

Matrix: Water

Analysis Batch: 298118

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	74.3		30 - 110								

Lab Sample ID: 440-178167-M-1-H MSD

Matrix: Water

Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual								
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	89.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Rad

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-1 DU	Outfall004_20170218_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 294401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294401/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294401/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-294401/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 294407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294407/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294407/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-294407/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSE 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Rad (Continued)

Prep Batch: 298177 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p> <p>Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 004 Comp</p>		<p>Project Manager: Katherine Miller 520-289-8606, 520-304-6944 (cell)</p> <p>Field Manager: Mark Dominick 818-350-7312, 818-599-0702 (cell)</p>									
<p>Sample: Bryan Bengson, Terry Maurer</p>		<p><small>Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement # 2015-18, "as amended" by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories Inc.</small></p>											
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Priority Pollutants-SVOCs (625)	Asbestos (EPA100.2)	Chlorpyrifos, Diazinon (5925.2)	Cr (V), Total (E218.6)	Comments
Outfall 004	Outfall004_20170218_Comp	2/18/2017 12:05	WM	1 L Glass Amber 1 L Poly	2 *	None	175	No	X				Only at Outfall 008, 009 Extract within 24-Hours of sampling.
	Outfall004_20170218_Comp_Extra	2/18/2017 12:05	WM	500 mL Poly	1 *	None	260	No		X			Hold
			WM	1 L Glass Amber	2 *	None	175	No	H				Hold
			WM	1 L Glass Amber	2 *	HCl	275	No					

Legend: R = Routine, A = Annual

Relinquished By <i>Patton</i>	Date/Time 2/18/17	Company	Received By <i>Katherine Miller</i>	Date/Time 2/18/17 11:00	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> X 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By <i>Bryan Bengson</i>	Date/Time 2/18/17 10:30	Company	Received By <i>Patton</i>	Date/Time 2/18/17 10:40	Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> X



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 008, 010] Outfall 004 Comp</p>		<p>ANALYSIS REQUIRED</p>					
<p>Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p>		<p>Priority Pollutants-SVOCs (825) X</p> <p>Asbestos (EPA100.2) X</p> <p>Chlorpyrifos, Dazathion (825.2) X</p> <p>Cr (VI), Total (E218.8)</p>					
<p>Sample: Bryan Benson, Terry Maurer</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Comments</p>					
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	# of Preservative	Bottle #	MS/MSD	Notes
Outfall 004	Outfall004_20170218_Comp	2/18/2017 12:05	WM	1L Glass Amber	2 *	None	175	No	Only at Outfall 008, 009 Extract within 24-Hours of sampling.
	Outfall004_20170218_Comp_Extra	2/18/2017 12:05	WM	500 ml Poly	1 *	None	260	No	Hold
			WM	1L Glass Amber	2 *	HCl	175	No	Hold
			WM	1L Glass Amber	2 *	HCl	275	No	Hold

Relinquished By <i>[Signature]</i>	Date/Time: 2/18/17	Company:	Received By <i>[Signature]</i>	Date/Time: 2/18/17 11:00	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> X 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By <i>[Signature]</i>	Date/Time: 2/18/17 18:30	Company:	Received By <i>[Signature]</i>	Date/Time: 2/18/17 18:40	Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/> X



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-2

Login Number: 177392

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-2

Login Number: 177392

List Number: 3

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/22/17 01:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-177392-1	Outfall004_20170218_Comp	79.6
LCS 160-294401/2-A	Lab Control Sample	89.7
LCSD 160-294401/3-A	Lab Control Sample Dup	90.9
MB 160-294401/1-A	Method Blank	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-177392-1	Outfall004_20170218_Comp	79.6	81.9
LCS 160-294407/2-A	Lab Control Sample	89.7	86.4
LCSD 160-294407/3-A	Lab Control Sample Dup	90.9	87.5
MB 160-294407/1-A	Method Blank	86.7	83.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-177392-1	Outfall004_20170218_Comp	80.6	93.1
440-177394-A-1-I MS	Matrix Spike	80.3	104
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177392-1	Outfall004_20170218_Comp	85.3
440-177394-A-1-L MS	Matrix Spike	63.1
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177392-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 14, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177392-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall004_20170218_ Comp	440-177392-1	N/A	Water	2/18/17 12:05 PM	E200.8
Outfall004_20170218_ Comp_F	440-177392-2	N/A	Water	2/18/17 12:05 PM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177392-4:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 14, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall004_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals results from this sample were qualified as estimated (J for detects, UJ for nondetects).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the ICPMS CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results. It should be noted that complete raw data was not provided for ICPMS calibration blanks and method blanks; this review is based on summary data for those blanks.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICPMS ICSA analyses; this review is based on summary data for those analyses.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall004_20170218_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively. MS/MSD analyses were not



performed on a sample in this SDG for total metals.

III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773924

Analysis Method E200.8

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	600	100	50	ug/L			
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Chromium	T	7440-47-3	ND	5.0	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.69	0.10	0.050	mg/L			
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Silver	T	7440-22-4	ND	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	28	20	10	ug/L			

Sample Name Outfall004_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	D	7429-90-5	110	100	50	ug/L	QP	J	H
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	0.10	0.10	0.050	mg/L	MBQP	J	H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	17	20	10	ug/L	J,DXQP	J	DNQ, H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177392-4

Client Project/Site: Routine Outfall 004 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 3:37:01 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 3:37:01 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177392-1	Outfall004_20170218_Comp	Water	02/18/17 12:05	02/18/17 18:40
440-177392-2	Outfall004_20170218_Comp_F	Water	02/18/17 12:05	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Job ID: 440-177392-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177392-4**

Comments

200.7 metals reported with 200.8 method with 200.7 RLs except Silver.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.8° C, 1.9° C, 3.3° C and 3.9° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall004_20170218_Comp_Extra (440-177392-3). received #3 not listed on coc.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Client Sample ID: Outfall004_20170218_Comp

Lab Sample ID: 440-177392-1

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:52	1
Aluminum	600		100	50	ug/L		03/01/17 15:15	03/03/17 14:52	1
Arsenic	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:52	1
Beryllium	ND		2.0	1.0	ug/L		03/01/17 15:15	03/03/17 14:52	1
Chromium	ND		5.0	2.5	ug/L		03/01/17 15:15	03/03/17 14:52	1
Iron	0.69		0.10	0.050	mg/L		03/01/17 15:15	03/03/17 14:52	1
Nickel	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:52	1
Vanadium	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:52	1
Zinc	28		20	10	ug/L		03/01/17 15:15	03/03/17 14:52	1

Client Sample ID: Outfall004_20170218_Comp_F

Lab Sample ID: 440-177392-2

Date Collected: 02/18/17 12:05

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	10	5.0	ug/L		03/01/17 09:47	03/01/17 21:22	1
Aluminum	110	QP	100	50	ug/L		03/01/17 09:47	03/01/17 21:22	1
Arsenic	ND	QP	10	5.0	ug/L		03/01/17 09:47	03/01/17 21:22	1
Beryllium	ND	QP	2.0	1.0	ug/L		03/01/17 09:47	03/01/17 21:22	1
Chromium	ND	QP	5.0	2.5	ug/L		03/01/17 09:47	03/01/17 21:22	1
Iron	0.10	MB QP	0.10	0.050	mg/L		03/01/17 09:47	03/01/17 21:22	1
Nickel	ND	QP	10	5.0	ug/L		03/01/17 09:47	03/01/17 21:22	1
Vanadium	ND	QP	10	5.0	ug/L		03/01/17 09:47	03/01/17 21:22	1
Zinc	17	J,DX QP	20	10	ug/L		03/01/17 09:47	03/01/17 21:22	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Client Sample ID: Outfall004_20170218_Comp

Date Collected: 02/18/17 12:05

Date Received: 02/18/17 18:40

Lab Sample ID: 440-177392-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:52	IH1	TAL IRV

Client Sample ID: Outfall004_20170218_Comp_F

Date Collected: 02/18/17 12:05

Date Received: 02/18/17 18:40

Lab Sample ID: 440-177392-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	391309	03/01/17 09:47	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			391549	03/01/17 21:22	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:44	1
Aluminum	ND		100	50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Arsenic	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:44	1
Beryllium	ND		2.0	1.0	ug/L		03/01/17 15:15	03/03/17 14:44	1
Chromium	ND		5.0	2.5	ug/L		03/01/17 15:15	03/03/17 14:44	1
Iron	ND		0.10	0.050	mg/L		03/01/17 15:15	03/03/17 14:44	1
Nickel	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:44	1
Vanadium	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:44	1
Zinc	ND		20	10	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	75.1		ug/L		94	85 - 115
Aluminum	80.0	78.0	J,DX	ug/L		97	85 - 115
Arsenic	80.0	72.5		ug/L		91	85 - 115
Beryllium	80.0	71.3		ug/L		89	85 - 115
Chromium	80.0	74.3		ug/L		93	85 - 115
Iron	0.800	0.776		mg/L		97	85 - 115
Nickel	80.0	74.3		ug/L		93	85 - 115
Vanadium	80.0	75.1		ug/L		94	85 - 115
Zinc	80.0	74.6		ug/L		93	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	79.2		ug/L		99	70 - 130
Aluminum	2600		80.0	3130	BB	ug/L		606	70 - 130
Arsenic	ND		80.0	75.8		ug/L		95	70 - 130
Beryllium	ND		80.0	71.8		ug/L		90	70 - 130
Chromium	3.7	J,DX	80.0	79.4		ug/L		95	70 - 130
Iron	3.7		0.800	4.70	BB	mg/L		123	70 - 130
Nickel	ND		80.0	79.8		ug/L		100	70 - 130
Vanadium	7.6	J,DX	80.0	86.2		ug/L		98	70 - 130
Zinc	14	J,DX	80.0	89.7		ug/L		95	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	76.8		ug/L		96	70 - 130	3	20
Aluminum	2600		80.0	3730	BB	ug/L		1358	70 - 130	18	20
Arsenic	ND		80.0	74.5		ug/L		93	70 - 130	2	20
Beryllium	ND		80.0	69.9		ug/L		87	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Chromium	3.7	J,DX	80.0	78.3		ug/L		93	70 - 130	1	20
Iron	3.7		0.800	5.51	BB	mg/L		224	70 - 130	16	20
Nickel	ND		80.0	76.3		ug/L		95	70 - 130	4	20
Vanadium	7.6	J,DX	80.0	84.0		ug/L		96	70 - 130	3	20
Zinc	14	J,DX	80.0	89.3		ug/L		94	70 - 130	0	20

Lab Sample ID: MB 440-389636/1-E
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 391309

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Silver	ND		10	5.0	ug/L		03/01/17 09:47	03/01/17 21:19	1
Aluminum	ND		100	50	ug/L		03/01/17 09:47	03/01/17 21:19	1
Arsenic	ND		10	5.0	ug/L		03/01/17 09:47	03/01/17 21:19	1
Beryllium	ND		2.0	1.0	ug/L		03/01/17 09:47	03/01/17 21:19	1
Chromium	ND		5.0	2.5	ug/L		03/01/17 09:47	03/01/17 21:19	1
Iron	ND		0.10	0.050	mg/L		03/01/17 09:47	03/01/17 21:19	1
Nickel	ND		10	5.0	ug/L		03/01/17 09:47	03/01/17 21:19	1
Vanadium	ND		10	5.0	ug/L		03/01/17 09:47	03/01/17 21:19	1
Zinc	ND		20	10	ug/L		03/01/17 09:47	03/01/17 21:19	1

Lab Sample ID: LCS 440-389636/2-E
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Silver	80.0	79.1		ug/L		99	85 - 115
Aluminum	80.0	82.9	J,DX	ug/L		104	85 - 115
Arsenic	80.0	79.7		ug/L		100	85 - 115
Beryllium	80.0	76.3		ug/L		95	85 - 115
Chromium	80.0	82.3		ug/L		103	85 - 115
Iron	0.800	0.871		mg/L		109	85 - 115
Nickel	80.0	81.8		ug/L		102	85 - 115
Vanadium	80.0	83.1		ug/L		104	85 - 115
Zinc	80.0	81.4		ug/L		102	85 - 115

Lab Sample ID: 440-177392-2 MS
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Outfall004_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				Limits
Silver	0.0200		80.0	77.3		ug/L		97	70 - 130
Aluminum	109		80.0	194		ug/L		106	70 - 130
Arsenic	1.10		80.0	79.0		ug/L		97	70 - 130
Beryllium	0.0180		80.0	74.6		ug/L		93	70 - 130
Chromium	0.424		80.0	81.4		ug/L		102	70 - 130
Iron	105		0.800	0.913	BB	mg/L		-1296 3	70 - 130
Nickel	1.03		80.0	80.0		ug/L		99	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-177392-2 MS
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Outfall004_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Vanadium	1.20		80.0	80.6		ug/L		99	70 - 130
Zinc	17.3		80.0	95.7		ug/L		98	70 - 130

Lab Sample ID: 440-177392-2 MSD
Matrix: Water
Analysis Batch: 391549

Client Sample ID: Outfall004_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 391309

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	0.0200		80.0	78.2		ug/L		98	70 - 130	1	20
Aluminum	109		80.0	194		ug/L		105	70 - 130	0	20
Arsenic	1.10		80.0	78.5		ug/L		97	70 - 130	1	20
Beryllium	0.0180		80.0	74.2		ug/L		93	70 - 130	0	20
Chromium	0.424		80.0	80.2		ug/L		100	70 - 130	1	20
Iron	105		0.800	0.931	BB BA	mg/L		-1296	70 - 130	200	20
								1			
Nickel	1.03		80.0	80.8		ug/L		100	70 - 130	1	20
Vanadium	1.20		80.0	81.7		ug/L		101	70 - 130	1	20
Zinc	17.3		80.0	100		ug/L		103	70 - 130	4	20

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177392-2 MS	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177392-2 MSD	Outfall004_20170218_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 391309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-E	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-E	Lab Control Sample	Dissolved	Water	200.2	389636
440-177392-2 MS	Outfall004_20170218_Comp_F	Dissolved	Water	200.2	389636
440-177392-2 MSD	Outfall004_20170218_Comp_F	Dissolved	Water	200.2	389636

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-2	Outfall004_20170218_Comp_F	Dissolved	Water	200.8	391309
MB 440-389636/1-E	Method Blank	Dissolved	Water	200.8	391309
LCS 440-389636/2-E	Lab Control Sample	Dissolved	Water	200.8	391309
440-177392-2 MS	Outfall004_20170218_Comp_F	Dissolved	Water	200.8	391309
440-177392-2 MSD	Outfall004_20170218_Comp_F	Dissolved	Water	200.8	391309

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177392-1	Outfall004_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BB	Sample > 4X spike concentration
BA	Relative percent difference out of control

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 004 Comp

TestAmerica Job ID: 440-177392-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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773012

CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvasi Patel Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project: Boeing-SFPL NPDES Permit 2017 Annual Outfall 003-007, 008, 010 Outfall 004 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.950.7312, 818.598.0702 (cell)</p>		<p>Sample ID: Outfall004_20170218_Comp</p>		<p>Sampler: Bryan Benson, Tony Maurer</p>		<p>Sample Matrix: VM</p>		<p>Container Type: 500 mL Poly</p>		<p>Preservative: HNO₃</p>		<p>MS/MSD: No</p>	
<p>Sample Description: Outfall004_20170218_Comp_Extra</p>		<p>Sampling Date/Time: 2/18/2017 12:05</p>		<p>Container Type: 1 L Glass Amber</p>		<p>Preservative: None</p>		<p>MS/MSD: No</p>		<p>Sample Matrix: VM</p>		<p>Container Type: 1 L Poly</p>		<p>Preservative: None</p>		<p>MS/MSD: No</p>	
<p>Sample Description: Outfall004_20170218_Comp_F</p>		<p>Sampling Date/Time: 2/18/2017 12:05</p>		<p>Container Type: 1 L Glass Amber</p>		<p>Preservative: None</p>		<p>MS/MSD: No</p>		<p>Sample Matrix: VM</p>		<p>Container Type: 1 L Poly</p>		<p>Preservative: None</p>		<p>MS/MSD: No</p>	
<p>Sample Description: Outfall004_20170218_Comp_Extra</p>		<p>Sampling Date/Time: 2/18/2017 12:05</p>		<p>Container Type: 1 L Glass Amber</p>		<p>Preservative: None</p>		<p>MS/MSD: No</p>		<p>Sample Matrix: VM</p>		<p>Container Type: 1 L Glass Amber</p>		<p>Preservative: None</p>		<p>MS/MSD: No</p>	

48 hours Holding Time NGS & NGZ

Unlabeled and unreserved analytical. Separate RAD onto another workorder. Analyze duplicates, not MS/MSD. Only test if first or second rain events of the year.

Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Filter and preserve with 24hrs of receipt at lab.

Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.

Hold

Hold

Hold

<p>Requisitioned By: TJD</p> <p>Date/Time: 2/18/17</p> <p>Company: Haley & Aldrich</p>	<p>Received By: Bryan Benson</p> <p>Date/Time: 2/18/17 10:00</p> <p>Company: Haley & Aldrich</p>	<p>Turn-around time (Check): 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/></p>
<p>Requisitioned By: Bryan Benson</p> <p>Date/Time: 2/18/17 10:00</p> <p>Company: Haley & Aldrich</p>	<p>Received By: Tony Maurer</p> <p>Date/Time: 2/18/17 10:00</p> <p>Company: Haley & Aldrich</p>	<p>Sample Integrity (Check): Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/> Data Requirements (Check): No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/></p>

Take from total metals

3.0% / 3.3% SCL6

1.5% / 1.8% SCL6

1.6% / 1.9% SCL6

3.6% / 3.9% SCL6

440-177392 Chain of Custody



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p> <p>Test America Contact: Unvashi Patel 17461 Darian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p> <p><small>Test America's services under this CoC shall be performed in accordance with the T&A's with Blanket Service Agreement # 20-18-18, "as amended" by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and Test America Laboratories Inc.</small></p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 004 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p> <p>Field Manager: Mark Dominick 818-350.7312, 818-599.0702 (cell)</p>									
<p>Sampler: Bryan Bengson, Terry Maurer</p>	<p>Sample ID: Outfall004_20170218_Comp</p>	<p>Sample Matrix: WM</p>	<p>Sampling Date/Time: 2/18/2017 12:05</p>	<p>Container Type: 1 L Glass Amber</p>	<p># of Cont.: 2 *</p>	<p>Preservative: None</p>	<p>Bottle #: 175</p>	<p>MS/MSD: No</p>	<p>Priority Pollutants-SVOCs (625) X</p>	<p>Asbestos (EPA100.2) X</p>	<p>Chlorpyrifos, Diazinon (5925.2) X</p>	<p>Cr (V), Total (E218.6) X</p>	<p>Comments: Only at Outfall 008, 009 Extract within 24-Hours of sampling.</p>
Outfall 004		WM	2/18/2017	1 L Glass Amber	2 *	None	175	No	X				
	Outfall004_20170218_Comp_Extra	WM	2/18/2017	500 mL Poly	1 *	None	260	No		X			Hold
		WM		1 L Glass Amber	2 *	None	175	No	H				Hold
		WM		1 L Glass Amber	2 *	HCl	275	No					

ANALYSIS REQUIRED

A A A A A A

Legend: R = Routine, A = Annual

<p>Relinquished By: <i>Patton</i></p>	<p>Date/Time: 2/18/17</p>	<p>Company:</p>	<p>Received By: <i>Bryan Bengson</i></p>	<p>Date/Time: 2/18/17 11:00</p>	<p>Company:</p>	<p>Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____</p>
<p>Relinquished By: <i>Bryan Bengson</i></p>	<p>Date/Time: 2/18/17 10:30</p>	<p>Company:</p>	<p>Received By: <i>Patton</i></p>	<p>Date/Time: 2/18/17 10:40</p>	<p>Company:</p>	<p>Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/></p>



CHAIN OF CUSTODY FORM

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p> <p>Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p> <p><small>Test America's services under this CoC shall be performed in accordance with the T&A when Blanket Service Agreement # 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</small></p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 008, 010] Outfall 004 Comp</p> <p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p> <p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>ANALYSIS REQUIRED</p>					
<p>Sample: Bryan Benson, Terry Maurer</p>		<p>Priority Pollutants-SVOCs (825) X</p> <p>Asbestos (EPA100.2) X</p> <p>Chlorpyrifos, Dazathion (825.2) X</p> <p>Cr (VI), Total (E218.8) X</p>		<p>Only at Outfall 008, 009 Extract within 24-Hours of sampling.</p>					
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	# of Preservative	Bottle #	MS/MSD	Comments
Outfall 004	Outfall004_20170218_Comp	2/18/2017 12:05	WM	1L Glass Amber	2 *	None	175	No	
			WM	1L Poly	1 *	None	270	No	
			WM	1L Glass Amber	2 *	HCl	275	No	
			WM	500 ml Poly	1 *	None	260	No	
	Outfall004_20170218_Comp_Extra	2/18/2017 12:05	WM	1L Glass Amber	2 *	None	175	No	
			WM	1L Glass Amber	2 *	HCl	275	No	

<p>Relinquished By: <i>[Signature]</i> Date/Time: 2/18/17</p>	<p>Relinquished By: <i>[Signature]</i> Date/Time: 2/18/17 11:00</p>	<p>Relinquished By: <i>[Signature]</i> Date/Time: 2/18/17 13:40</p>
<p>Company: _____</p>	<p>Company: _____</p>	<p>Company: _____</p>

<p>Legend: R = Routine, A = Annual</p>	<p>Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <u>X</u> 48 Hour: _____ 5 Day: _____ Normal: _____</p>	<p>Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <u>X</u></p>
--	---	---



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177392-4

Login Number: 177392

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174339-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174339-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170122_ Grab	440-174339-2	N/A	Water	1/22/17 3:15 PM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174339-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- The COC requested analysis for human bacteroides; however, the sample for this analysis was received at TA-Irvine and was not sent to Source Molecular. The analysis was cancelled and the client was notified.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. STANDARD METHODS 9211F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The sample was analyzed approximately 16 hours past the analytical holding time requirement of 8 hours for Method 9221F; therefore, the sample result was qualified as estimated (J).

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. *METHOD BLANKS*

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. *LABORATORY CONTROL SAMPLES*

he presumptive test was analyzed with the positive detects for the target bacteria.

III.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analysis is not applicable to this method.

III.3.5. *SAMPLE RESULT VERIFICATION*

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401743391

Analysis Method *SM9221F*

Sample Name Outfall006_20170122_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/22/2017 3:15:00 PM **Validation Level:** 8

Lab Sample Name: 440-174339-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	80	1.8	1.8	mpn/100	BUBV	J	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174339-1

Client Project/Site: Annual Outfall 006 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/25/2017 7:19:08 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/25/2017 7:19:08 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174339-2	Outfall006_20170122_Grab	Water	01/22/17 15:15	01/23/17 11:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Job ID: 440-174339-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-174339-1**

Comments

Human Bacti container was given to TA Micro along with other bacti sample. Human Bacti was not sent to Source Molecular. Client was notified of missed analysis.

Receipt

The samples were received on 1/23/2017 11:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

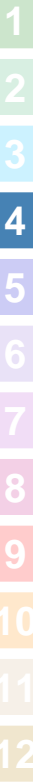
Biology

Method(s) SM 9221F: The following sample was received outside of holding time: Outfall_20170122_Grab (440-174339-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Client Sample ID: Outfall006_20170122_Grab

Lab Sample ID: 440-174339-2

Date Collected: 01/22/17 15:15

Matrix: Water

Date Received: 01/23/17 11:45

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	80	BU BV	1.8	1.8	MPN/100mL			01/23/17 14:57	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Client Sample ID: Outfall006_20170122_Grab

Lab Sample ID: 440-174339-2

Date Collected: 01/22/17 15:15

Matrix: Water

Date Received: 01/23/17 11:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384613	(Start) 01/23/17 14:57 (End) 01/26/17 14:36	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Biology

Analysis Batch: 384613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174339-2	Outfall006_20170122_Grab	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Qualifiers

Biology

Qualifier	Qualifier Description
BU	Analyzed out of holding time
BV	Sample received after holding time expired

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-174339-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174339-1

Login Number: 174339

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175290-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175290-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170122_Grab	440-175290-1	N/A	Water	1/22/17 3:15 PM	E1664, E624



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175290-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

MEC^x noted anomalies regarding sample management identified below:

- Methods SM9221F (*E. coli*) and Human Bacteroides were requested on the COC; however, sample volume was not received for these analyses.
- The samples in this SDG were received on 1/22/2017, but were not logged and processed until 2/1/2017.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Analytical holding times were met with the following exception. The preserved water sample was analyzed within 14 days of collection. Due to a storage and log-in error, the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was logged and analyzed four days past the holding time of within seven days of collection. Results for acrolein, acrylonitrile and 2-chloroethyl vinyl ether, all nondetects, were qualified as estimated (UJ).

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met, with one exception. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and applicable CCV recoveries were within the method control limits, with the exception of the %D of 55.6% for acrolein. The nondetect result for acrolein was qualified as estimated (UJ).

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

A trip blank was not identified for this SDG.

III.4.2. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

III.4.3. **FIELD DUPLICATES**

Field duplicate samples were not identified in this SDG.

III.5. **INTERNAL STANDARDS PERFORMANCE**

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. **COMPOUND IDENTIFICATION**

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. **TENTATIVELY IDENTIFIED COMPOUNDS**

The laboratory did not report TICs for this SDG.

III.9. **SYSTEM PERFORMANCE**

Review of the raw data indicated no issues with system performance.

IV. **METHOD 1664A — HEXANE EXTRACTABLE MATERIAL (OIL AND GREASE)**

Marcia Hilchey of MEC^x reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. **HOLDING TIMES**

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met

IV.2. **CALIBRATION**

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

IV.3.1. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

IV.3.2. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

IV.3.3. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

IV.3.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

IV.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401752901

Analysis Method E1664

Sample Name Outfall006_20170122_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/22/2017 3:15:00 PM Validation Level: 8

Lab Sample Name: 440-175290-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	4.7	1.3	mg/L	U	U	

Analysis Method E624

Sample Name Outfall006_20170122_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/22/2017 3:15:00 PM Validation Level: 8

Lab Sample Name: 440-175290-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	UBU	UJ	H
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	UBU	UJ	C, H
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	UBU	UJ	H
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	

Analysis Method *E624*

Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175290-1

Client Project/Site: Annual Outfall 006 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/6/2017 8:42:17 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/6/2017 8:42:17 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175290-1	Outfall006_20170122_Grab	Water	01/22/17 15:15	01/22/17 20:05

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Job ID: 440-175290-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175290-1**

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 8:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° C.

Receipt Exceptions

Did not receive containers for E. Coli and Human Bacteroidales.

The cooler for this project was received on 1/22/17 at 20:05 by Zach Martin, a technician from metals department, he placed the samples on shelf ICOC-31. Sample Control discovered the samples on 2/1/17 and proceed to the log in and label process. The analysis for 624 A+A+2CVE past hold time.

Outfall006_20170122_Grab (440-175290-1) and Outfall006_20170122_Grab_Extra (440-175290-2)

Method(s) 624: The following sample was log in outside of holding time: Outfall006_20170122_Grab (440-175290-1). Samples were storage in a unusual place and got log in on 2/1/17 outside hold time.

GC/MS VOA

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-385949 recovered above the upper control limit for Acrolein. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall006_20170122_Grab (440-175290-1) and (CCVIS 440-385949/2).

Method(s) 624: The preservative used in the sample containers provided is not compatible with the Method 624 analytes requested. The following sample was received preserved with hydrochloric acid: (440-175117-A-5 MS) and (440-175117-A-5 MSD). The requested target analyte list contains 2-chloroethyl vinyl ether and/or acrolein, which are acid-labile compounds that degrade in an acidic medium.

Method(s) 624: The following sample was analyzed outside of analytical holding time due to laboratory oversight: Outfall006_20170122_Grab (440-175290-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-386287 and analytical batch 440-386497. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Client Sample ID: Outfall006_20170122_Grab

Lab Sample ID: 440-175290-1

Date Collected: 01/22/17 15:15

Matrix: Water

Date Received: 01/22/17 20:05

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
2-Chloroethyl vinyl ether	ND	BU	2.0	1.0	ug/L			02/02/17 10:13	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Acrolein	ND	BU	5.0	2.5	ug/L			02/02/17 10:13	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Acrylonitrile	ND	BU	2.0	1.0	ug/L			02/02/17 10:13	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Benzene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Bromoform	ND		1.0	0.40	ug/L			02/03/17 11:24	1
Bromomethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Chloroethane	ND		1.0	0.40	ug/L			02/03/17 11:24	1
Chloroform	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Chloromethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/03/17 11:24	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Toluene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Trichloroethene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/03/17 11:24	1
Naphthalene	ND		1.0	0.40	ug/L			02/03/17 11:24	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/03/17 11:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 128		02/02/17 10:13	1
Dibromofluoromethane (Surr)	105		76 - 132		02/02/17 10:13	1
4-Bromofluorobenzene (Surr)	92		80 - 120		02/02/17 10:13	1
4-Bromofluorobenzene (Surr)	94		80 - 120		02/03/17 11:24	1
Dibromofluoromethane (Surr)	110		76 - 132		02/03/17 11:24	1
Toluene-d8 (Surr)	106		80 - 128		02/03/17 11:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.7	1.3	mg/L		02/03/17 08:53	02/04/17 02:52	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Client Sample ID: Outfall006_20170122_Grab

Lab Sample ID: 440-175290-1

Date Collected: 01/22/17 15:15

Matrix: Water

Date Received: 01/22/17 20:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	385949	02/02/17 10:13	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	386262	02/03/17 11:24	RM	TAL IRV
Total/NA	Prep	1664A			1060 mL	1000 mL	386287	02/03/17 08:53	L1A	TAL IRV
Total/NA	Analysis	1664A		1			386497	02/04/17 02:52	BAW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-385949/4
Matrix: Water
Analysis Batch: 385949

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			02/02/17 08:46	1
Acrolein	ND		5.0	2.5	ug/L			02/02/17 08:46	1
Acrylonitrile	ND		2.0	1.0	ug/L			02/02/17 08:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 128		02/02/17 08:46	1
Dibromofluoromethane (Surr)	111		76 - 132		02/02/17 08:46	1
4-Bromofluorobenzene (Surr)	94		80 - 120		02/02/17 08:46	1

Lab Sample ID: LCS 440-385949/5
Matrix: Water
Analysis Batch: 385949

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	22.1		ug/L		88	37 - 150
Acrolein	25.0	29.0		ug/L		116	10 - 145
Acrylonitrile	250	241		ug/L		96	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	107		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	93		80 - 120

Lab Sample ID: 440-175117-A-5 MS
Matrix: Water
Analysis Batch: 385949

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		125	ND	LN	ug/L		0	10 - 140
Acrolein	ND		125	128		ug/L		102	10 - 147
Acrylonitrile	ND		1250	1040		ug/L		83	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	107		80 - 128
Dibromofluoromethane (Surr)	107		76 - 132
4-Bromofluorobenzene (Surr)	94		80 - 120

Lab Sample ID: 440-175117-A-5 MSD
Matrix: Water
Analysis Batch: 385949

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
2-Chloroethyl vinyl ether	ND		125	ND	LN	ug/L		0	10 - 140	NC	25
Acrolein	ND		125	119		ug/L		95	10 - 147	7	40
Acrylonitrile	ND		1250	1040		ug/L		83	38 - 144	0	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175117-A-5 MSD
Matrix: Water
Analysis Batch: 385949

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	104		80 - 128
Dibromofluoromethane (Surr)	106		76 - 132
4-Bromofluorobenzene (Surr)	94		80 - 120

Lab Sample ID: MB 440-386262/4
Matrix: Water
Analysis Batch: 386262

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Benzene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Bromoform	ND		1.0	0.40	ug/L			02/03/17 09:29	1
Bromomethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Chlorobenzene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Dibromochloromethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Chloroethane	ND		1.0	0.40	ug/L			02/03/17 09:29	1
Chloroform	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Chloromethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Bromodichloromethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Ethylbenzene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Methylene Chloride	ND		2.0	0.88	ug/L			02/03/17 09:29	1
Tetrachloroethene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Toluene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Vinyl chloride	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Trichloroethene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			02/03/17 09:29	1
Naphthalene	ND		1.0	0.40	ug/L			02/03/17 09:29	1
Xylenes, Total	ND		1.0	0.50	ug/L			02/03/17 09:29	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120		02/03/17 09:29	1
Dibromofluoromethane (Surr)	111		76 - 132		02/03/17 09:29	1
Toluene-d8 (Surr)	105		80 - 128		02/03/17 09:29	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-386262/5

Matrix: Water

Analysis Batch: 386262

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	28.0		ug/L		112	70 - 130
1,1,2,2-Tetrachloroethane	25.0	25.3		ug/L		101	63 - 130
1,1,2-Trichloroethane	25.0	28.1		ug/L		113	70 - 130
1,1-Dichloroethane	25.0	26.9		ug/L		108	64 - 130
1,1-Dichloroethene	25.0	26.2		ug/L		105	70 - 130
1,2-Dichlorobenzene	25.0	25.7		ug/L		103	70 - 130
1,2-Dichloroethane	25.0	26.7		ug/L		107	57 - 138
1,2-Dichloropropane	25.0	26.6		ug/L		106	67 - 130
1,3-Dichlorobenzene	25.0	27.4		ug/L		110	70 - 130
1,4-Dichlorobenzene	25.0	25.7		ug/L		103	70 - 130
Benzene	25.0	26.0		ug/L		104	68 - 130
Bromoform	25.0	27.3		ug/L		109	60 - 148
Bromomethane	25.0	23.8		ug/L		95	64 - 139
Carbon tetrachloride	25.0	29.0		ug/L		116	60 - 150
Chlorobenzene	25.0	25.8		ug/L		103	70 - 130
Dibromochloromethane	25.0	27.6		ug/L		111	69 - 145
Chloroethane	25.0	25.9		ug/L		104	64 - 135
Chloroform	25.0	27.3		ug/L		109	70 - 130
Chloromethane	25.0	25.8		ug/L		103	47 - 140
cis-1,3-Dichloropropene	25.0	27.1		ug/L		109	70 - 133
Bromodichloromethane	25.0	27.4		ug/L		110	70 - 132
Ethylbenzene	25.0	26.1		ug/L		104	70 - 130
Methylene Chloride	25.0	25.2		ug/L		101	52 - 130
Tetrachloroethene	25.0	27.6		ug/L		110	70 - 130
Toluene	25.0	26.4		ug/L		105	70 - 130
trans-1,2-Dichloroethene	25.0	27.4		ug/L		110	70 - 130
trans-1,3-Dichloropropene	25.0	26.3		ug/L		105	70 - 132
Trichlorofluoromethane	25.0	33.9		ug/L		136	60 - 150
Vinyl chloride	25.0	21.2		ug/L		85	59 - 133
Trichloroethene	25.0	28.2		ug/L		113	70 - 130
cis-1,2-Dichloroethene	25.0	27.2		ug/L		109	70 - 133
Naphthalene	25.0	28.5		ug/L		114	60 - 140
Xylenes, Total	50.0	54.5		ug/L		109	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	109		80 - 128

Lab Sample ID: 440-175204-A-7 MS

Matrix: Water

Analysis Batch: 386262

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	25.1		ug/L		100	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	22.7		ug/L		91	63 - 130
1,1,2-Trichloroethane	ND		25.0	25.7		ug/L		103	70 - 130
1,1-Dichloroethane	ND		25.0	23.8		ug/L		95	65 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175204-A-7 MS

Matrix: Water

Analysis Batch: 386262

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	23.1		ug/L		92	70 - 130
1,2-Dichlorobenzene	ND		25.0	23.5		ug/L		94	70 - 130
1,2-Dichloroethane	ND		25.0	24.6		ug/L		99	56 - 146
1,2-Dichloropropane	ND		25.0	23.4		ug/L		93	69 - 130
1,3-Dichlorobenzene	ND		25.0	25.4		ug/L		101	70 - 130
1,4-Dichlorobenzene	ND		25.0	22.6		ug/L		91	70 - 130
Benzene	ND		25.0	23.1		ug/L		93	66 - 130
Bromoform	ND		25.0	24.6		ug/L		98	59 - 150
Bromomethane	ND		25.0	21.4		ug/L		85	62 - 131
Carbon tetrachloride	ND		25.0	25.5		ug/L		102	60 - 150
Chlorobenzene	ND		25.0	23.2		ug/L		93	70 - 130
Dibromochloromethane	ND		25.0	25.5		ug/L		102	70 - 148
Chloroethane	ND		25.0	23.1		ug/L		93	68 - 130
Chloroform	ND		25.0	24.5		ug/L		98	70 - 130
Chloromethane	ND		25.0	23.3		ug/L		93	39 - 144
cis-1,3-Dichloropropene	ND		25.0	24.3		ug/L		97	70 - 133
Bromodichloromethane	ND		25.0	24.6		ug/L		99	70 - 138
Ethylbenzene	ND		25.0	22.8		ug/L		91	70 - 130
Methylene Chloride	ND		25.0	23.3		ug/L		93	52 - 130
Tetrachloroethene	ND		25.0	24.8		ug/L		99	70 - 137
Toluene	ND		25.0	23.6		ug/L		94	70 - 130
trans-1,2-Dichloroethene	ND		25.0	24.7		ug/L		99	70 - 130
trans-1,3-Dichloropropene	ND		25.0	23.1		ug/L		93	70 - 138
Trichlorofluoromethane	ND		25.0	30.4		ug/L		121	60 - 150
Vinyl chloride	ND		25.0	19.2		ug/L		77	50 - 137
Trichloroethene	ND		25.0	25.3		ug/L		101	70 - 130
cis-1,2-Dichloroethene	ND		25.0	24.5		ug/L		98	70 - 130
Naphthalene	ND		25.0	25.2		ug/L		101	60 - 140
Xylenes, Total	ND		50.0	49.2		ug/L		98	70 - 133

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	105		80 - 128

Lab Sample ID: 440-175204-A-7 MSD

Matrix: Water

Analysis Batch: 386262

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	26.7		ug/L		107	70 - 130	6	20
1,1,1,2-Tetrachloroethane	ND		25.0	24.1		ug/L		96	63 - 130	6	30
1,1,2-Trichloroethane	ND		25.0	26.5		ug/L		106	70 - 130	3	25
1,1-Dichloroethane	ND		25.0	25.8		ug/L		103	65 - 130	8	20
1,1-Dichloroethene	ND		25.0	25.6		ug/L		102	70 - 130	10	20
1,2-Dichlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	5	20
1,2-Dichloroethane	ND		25.0	25.8		ug/L		103	56 - 146	4	20
1,2-Dichloropropane	ND		25.0	24.8		ug/L		99	69 - 130	6	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175204-A-7 MSD
Matrix: Water
Analysis Batch: 386262

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130	3	20
1,4-Dichlorobenzene	ND		25.0	24.1		ug/L		96	70 - 130	6	20
Benzene	ND		25.0	24.8		ug/L		99	66 - 130	7	20
Bromoform	ND		25.0	27.4		ug/L		110	59 - 150	11	25
Bromomethane	ND		25.0	24.1		ug/L		96	62 - 131	12	25
Carbon tetrachloride	ND		25.0	27.8		ug/L		111	60 - 150	9	25
Chlorobenzene	ND		25.0	24.7		ug/L		99	70 - 130	6	20
Dibromochloromethane	ND		25.0	27.2		ug/L		109	70 - 148	6	25
Chloroethane	ND		25.0	27.4		ug/L		110	68 - 130	17	25
Chloroform	ND		25.0	26.5		ug/L		106	70 - 130	8	20
Chloromethane	ND		25.0	26.2		ug/L		105	39 - 144	11	25
cis-1,3-Dichloropropene	ND		25.0	25.7		ug/L		103	70 - 133	6	20
Bromodichloromethane	ND		25.0	26.6		ug/L		106	70 - 138	7	20
Ethylbenzene	ND		25.0	24.6		ug/L		98	70 - 130	7	20
Methylene Chloride	ND		25.0	26.6		ug/L		106	52 - 130	13	20
Tetrachloroethene	ND		25.0	26.5		ug/L		106	70 - 137	6	20
Toluene	ND		25.0	24.4		ug/L		97	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.5		ug/L		106	70 - 130	7	20
trans-1,3-Dichloropropene	ND		25.0	25.6		ug/L		103	70 - 138	10	25
Trichlorofluoromethane	ND		25.0	33.0		ug/L		132	60 - 150	8	25
Vinyl chloride	ND		25.0	21.7		ug/L		87	50 - 137	12	30
Trichloroethene	ND		25.0	27.2		ug/L		109	70 - 130	7	20
cis-1,2-Dichloroethene	ND		25.0	26.7		ug/L		107	70 - 130	9	20
Naphthalene	ND		25.0	27.2		ug/L		109	60 - 140	7	30
Xylenes, Total	ND		50.0	51.0		ug/L		102	70 - 133	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	107		76 - 132
Toluene-d8 (Surr)	103		80 - 128

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-386287/1-A
Matrix: Water
Analysis Batch: 386497

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386287

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/03/17 08:53	02/04/17 02:52	1

Lab Sample ID: LCS 440-386287/2-A
Matrix: Water
Analysis Batch: 386497

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386287

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.9		mg/L		90	78 - 114

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCSD 440-386287/3-A
 Matrix: Water
 Analysis Batch: 386497

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 386287

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	34.9		mg/L		87	78 - 114	3	11

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

GC/MS VOA

Analysis Batch: 385949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175290-1	Outfall006_20170122_Grab	Total/NA	Water	624	
MB 440-385949/4	Method Blank	Total/NA	Water	624	
LCS 440-385949/5	Lab Control Sample	Total/NA	Water	624	
440-175117-A-5 MS	Matrix Spike	Total/NA	Water	624	
440-175117-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 386262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175290-1	Outfall006_20170122_Grab	Total/NA	Water	624	
MB 440-386262/4	Method Blank	Total/NA	Water	624	
LCS 440-386262/5	Lab Control Sample	Total/NA	Water	624	
440-175204-A-7 MS	Matrix Spike	Total/NA	Water	624	
440-175204-A-7 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Prep Batch: 386287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175290-1	Outfall006_20170122_Grab	Total/NA	Water	1664A	
MB 440-386287/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-386287/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-386287/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 386497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175290-1	Outfall006_20170122_Grab	Total/NA	Water	1664A	386287
MB 440-386287/1-A	Method Blank	Total/NA	Water	1664A	386287
LCS 440-386287/2-A	Lab Control Sample	Total/NA	Water	1664A	386287
LCSD 440-386287/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	386287

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Grab

TestAmerica Job ID: 440-175290-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM



440-175290 Chain of Custody

VLSOUVKT

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 006 Grab		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED MST-Bacteroides, Human F. coli (SM9221) Oil & Grease (1684-HEM) VOCs PP + xylenes, Freon 11 VOCs (624) - only A+A + ZCVF		Field Readings (Include units) Time of Readings: 1505 pH 7.29 Temp 8.23 °C/F		Meter serial # 1505	
Sample Description Outfall 006	Sample I.D. Outfall006_20170122_Grab	Sampling Date/Time 1/22/2017 1515	Sample Matrix WM	Container Type 125 mL Sterile Poly	# of Cont. 1	Preservative None	Bottle # 5	MS/MSD No	X	Comments Deliver to lab ASAP 8 hr hold time Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions Hold Hold Hold Store all samples for 6 months	Field readings QC Checked by: <i>Urvashi Patel</i> Date/Time: 1-22-17/1510	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____ Sample Integrity: (Check) Intact: _____ On Ice: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: _____	

These Samples at the Grab Portion of Outfall 006 for this storm event. Composite samples will follow and are to be added to this work order.

Legend: R = Routine, A = Annual

Relinquished By <i>[Signature]</i>	Date/Time 1/22/17 16:10	Company JMW ENV.	Received By <i>[Signature]</i>	Date/Time 1/22/17 1830
Relinquished By George Gevorikw	Date/Time 1/22/17 08:05 AM	Company DCS	Received By <i>[Signature]</i>	Date/Time 1/22/17 20:05
Relinquished By	Date/Time	Company	Received By	Date/Time

Missing
 Bacti bottles
 (12 5ml Sterile Pol7)

0.7/31.0
 IR-SCG



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175290-1

Login Number: 175290

List Number: 1

Creator: Skinner, Alma D

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174321-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174321-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170123_Comp	440-174321-1	N/A	Water	1/23/17 12:00 PM	E1613B, E100.2, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E525.2, E608, E625, EPA-821-R-02-013, SM2340B, SM2540C/D, SM4500-CN-E
Outfall006_20170123_Comp_F	440-174321-2	N/A	Water	1/23/17 12:00 PM	E200.7, E200.8, E245.1, SM2340B



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174321-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- Analysis of asbestos (Method 100.2) was subcontracted to LA Testing laboratory. The COC and sample receipt information for shipment of the sample was not included in the data package. No sample results were qualified.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.

The following issues were noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates, and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall006_20170123_Comp. The result for total HPCDD was qualified as nondetected (U). The reviewer verified that peaks comprising



total HpCDF in the sample included more peaks than the method blank total. The sample result for total HpCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL. Total HxCDD, containing an EMPC peak, was qualified as estimated (J).

IV. METHODS 200.7, 200.8, 245.1 AND SM2340B— METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^X reviewed the SDG on March 26, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, EPA Methods 200.7, 200.8, and 245.1, Standard Method 2340B, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

**IV.1. HOLDING TIMES**

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall006_20170123_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 4 days after receipt. All dissolved metals, dissolved mercury and hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES**IV.3.1. METHOD BLANKS**

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results. It should be noted that a dissolved method blank was not analyzed for dissolved 200.8 analytes.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%. It should be noted that a dissolved LCS was not analyzed for dissolved 200.7 or 200.8 analytes.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall008_20170121_Comp and Outfall009_20170121_Comp_F for all methods. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively, except as noted in the table below. The associated results were qualified as estimated with high potential bias (J+).

Analyte	MS/MSD recovery	MS/MSD RPD
total iron	198%/280%	23
total aluminum	233%/353%	28



Analyte	MS/MSD recovery	MS/MSD RPD
total copper	Acceptable/174%	62%

The laboratory did not analyze a post digestion spike.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

E. Wessling of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy based on the LCS results.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

The laboratory manually integrated the primary column for delta-BHC. The peak area resulting from the manual integration was less than an area corresponding to the MDL and the compound was reported by the laboratory as a nondetect. The reviewer did agree that manual integration of the peak was warranted; however, the reviewer did not agree with the manner in which the manual integration was performed. Based upon professional judgement, the result for delta-BHC was qualified as an estimated nondetect (UJ).



V.7. SYSTEM PERFORMANCE

In reviewing the raw data, MEC^X noted that the laboratory manually integrated 4,4'-DDE and endosulfan I in all calibration levels, LCS and MS/MSD samples. The peak, which was split into two peaks on the primary column, was less than 25% resolved. Based upon professional judgement, the reviewer qualified 4,4'-DDE and endosulfan I as estimated nondetects (UJ) in the site sample as it was unclear whether the occurrence of a single peak would cause a retention time shift or if the system would appropriately identify these target compounds.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the RL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with one exception. The initial calibration average RRFs were ≥ 0.05 and %RSD $\leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and %Ds were within the method control limit of $\leq 20\%$, with the exception of the ICV %D of -34.2 for benzidine. The sample result for benzidine was qualified as estimated (UJ) in sample Outfall006_20170123_Comp.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

The LCS/LCSD had recoveries above the control limits of 5-66% for benzidine, at 73% and 71%, respectively; however, as benzidine was not detected in the sample, no qualification was necessary. Recoveries were below the control limits in the LCSD only, for bis(2-chloroethoxy)methane, 3,3'-dichlorobenzidine, and n-nitrosodiphenylamine. Qualifications were not assigned for the recovery outliers in only the LCSD of the pair; however, due to recovery discrepancies, the following RPDs exceeded the control limit of $\leq 35\%$: bis(2-chloroethoxy)methane (88%), 3,3'-dichlorobenzidine (183%), benzo(a)pyrene (56%), 1,2-diphenylhydrazine (53%), and n-nitrosodiphenylamine (50%) The nondetect results for the RPD outliers were qualified as



estimated (UJ) in sample Outfall006_20170123_Comp. Remaining recoveries and RPDs were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.



VIII. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1)*, *EPA Method 525.2*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VIII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.

VIII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. The sample was analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSDs $\leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recoveries and RPDs were within the control limits of 70-130% and $\leq 30\%$, respectively.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within laboratory-established control limits of 70-130%.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG due to insufficient sample volume. MEC^X evaluated method accuracy and precision based on the LCS/LCSD results.

VIII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VIII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 885 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 100.2, 218.6, 300.0 and 821-R-02-013, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IX.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 24 hours from collection for hexavalent chromium
- 36 hours from collection for chronic toxicity
- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by



the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity. Calibration information was not provided for asbestos analysis.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

IX.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPD for total cyanide was $\leq 10\%$.

IX.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IX.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

It should be noted that no laboratory QC or raw data was presented in the SDG for asbestos analysis; however, the laboratory noted that the method-required analytical sensitivity of 0.2 million fibers per liter (MFL) was not met due to high particulate content of the sample.

IX.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743211

Analysis Method E1613B

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000012	0.000095	0.00000037	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000090	0.000095	0.00000047	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000081	0.000047	0.00000027	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000010	0.000047	0.00000052	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000063	0.000047	0.00000031	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000047	0.00000054	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000047	0.00000047	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000047	0.00000052	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000047	0.00000051	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000047	0.00000036	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000047	0.00000041	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000047	0.00000042	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000047	0.00000058	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000047	0.00000037	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000047	0.00000044	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000095	0.0000012	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000077	0.000095	0.00000029	ug/L	J,DX	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000095	0.00000040	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000014	0.000047	0.00000029	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000023	0.000047	0.00000052	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000033	0.000047	0.00000045	ug/L	J,DX	J	DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000012	0.000047	0.00000046	ug/L	J,DXq	J	DNQ, *III

Monday, April 03, 2017

Analysis Method E1613B

Total Tetrachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000047	0.00000042	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000047	0.00000058	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000015	0.0000095	0.00000029	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000095	0.00000040	ug/L	U	U	

Analysis Method E200.7

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	650	100	50	ug/L		J+	Q, Q1
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.070	0.050	0.025	mg/L			
Chromium	T	7440-47-3	ND	5.0	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.60	0.10	0.050	mg/L		J+	Q, Q1
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall006_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	7.0	10	5.0	ug/L	J,DX	J	DNQ, H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	U	UJ	H
Boron	D	7440-42-8	0.060	0.050	0.025	mg/L		J	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	U	UJ	H
Iron	D	7439-89-6	0.10	0.10	0.050	mg/L		J	H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	U	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	U	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	U	UJ	H

Analysis Method E200.8**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.7	2.0	0.50	ug/L		J+	Q, Q1
Lead	T	7439-92-1	0.90	1.0	0.50	ug/L	J,DX	J	DNQ
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall006_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	1.8	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	UIB	U	

Analysis Method E245.1**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall006_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.4	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	3.6	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	4.0	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E525.2**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	ND	0.97	0.49	ug/L	U	U	
Diazinon	N	333-41-5	ND	0.24	0.12	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 12:00:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0049	0.0039	ug/L	U	U	

Analysis Method *E608*

4,4'-DDE	N	72-55-9	ND	0.0049	0.0029	ug/L	U	UJ	*III
4,4'-DDT	N	50-29-3	ND	0.0098	0.0039	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0049	0.0015	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0049	0.0024	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.49	0.24	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.49	0.24	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.49	0.24	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.49	0.24	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.49	0.24	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.49	0.24	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.49	0.24	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.0098	0.0039	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.098	0.078	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0049	0.0034	ug/L	U	UJ	*III
Dieldrin	N	60-57-1	ND	0.0049	0.0020	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0049	0.0029	ug/L	U	UJ	*III
Endosulfan II	N	33213-65-9	ND	0.0049	0.0020	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.0098	0.0029	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0049	0.0020	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.0098	0.0020	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.0098	0.0029	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.0098	0.0029	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0049	0.0024	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.49	0.24	ug/L	U	U	

Analysis Method *E625*

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	0.985	0.493	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.493	0.197	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	0.985	0.493	ug/L	UBA	UJ	L1
1,3-Dichlorobenzene	N	541-73-1	ND	0.493	0.197	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.493	0.197	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.493	0.197	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	0.985	0.493	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	1.97	0.985	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	1.97	0.985	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	4.93	1.97	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	4.93	1.97	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2	ND	4.93	1.97	ug/L	U	U	

Analysis Method E625

2-Chloronaphthalene	N	91-58-7	ND	0.493	0.197	ug/L	U	U	
2-Chlorophenol	N	95-57-8	ND	0.985	0.493	ug/L	U	U	
2-Nitrophenol	N	88-75-5	ND	1.97	0.985	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	ND	4.93	1.97	ug/L	ULRBA	UJ	L1
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	4.93	1.97	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3	ND	0.985	0.493	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	ND	1.97	0.197	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.493	0.197	ug/L	U	U	
4-Nitrophenol	N	100-02-7	ND	4.93	1.97	ug/L	U	U	
Acenaphthene	N	83-32-9	ND	0.493	0.197	ug/L	U	U	
Acenaphthylene	N	208-96-8	ND	0.493	0.197	ug/L	U	U	
Anthracene	N	120-12-7	ND	0.493	0.197	ug/L	U	U	
Benzidine	N	92-87-5	ND	9.85	4.93	ug/L	ULQ	UJ	C
Benzo(a)anthracene	N	56-55-3	ND	4.93	1.97	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	ND	1.97	0.493	ug/L	UBA	UJ	L1
Benzo(b)fluoranthene	N	205-99-2	ND	1.97	0.985	ug/L	U	U	
Benzo(g,h,i)perylene	N	191-24-2	ND	4.93	1.97	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9	ND	0.493	0.246	ug/L	U	U	
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.493	0.197	ug/L	ULRBA	UJ	L1
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.493	0.197	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.93	1.97	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	ND	4.93	1.97	ug/L	U	U	
Chrysene	N	218-01-9	ND	0.493	0.197	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	ND	0.493	0.246	ug/L	U	U	
Diethyl phthalate	N	84-66-2	ND	0.985	0.493	ug/L	U	U	
Dimethyl phthalate	N	131-11-3	ND	0.493	0.246	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2	ND	1.97	0.985	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0	ND	4.93	1.97	ug/L	U	U	
Fluoranthene	N	206-44-0	ND	0.493	0.197	ug/L	U	U	
Fluorene	N	86-73-7	ND	0.493	0.197	ug/L	U	U	
Hexachlorobenzene	N	118-74-1	ND	0.985	0.493	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3	ND	1.97	0.493	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4	ND	4.93	1.97	ug/L	U	U	
Hexachloroethane	N	67-72-1	ND	2.96	0.493	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	1.97	0.985	ug/L	U	U	
Isophorone	N	78-59-1	ND	0.985	0.493	ug/L	U	U	
Naphthalene	N	91-20-3	ND	0.985	0.493	ug/L	U	U	
Nitrobenzene	N	98-95-3	ND	0.985	0.493	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	1.97	0.985	ug/L	U	U	
N-Nitrosodi-n-propylamine	N	621-64-7	ND	1.97	0.985	ug/L	U	U	
N-Nitrosodiphenylamine	N	86-30-6	ND	0.985	0.493	ug/L	ULRBA	UJ	L1
Pentachlorophenol	N	87-86-5	ND	1.97	0.985	ug/L	U	U	
Phenanthrene	N	85-01-8	ND	0.493	0.197	ug/L	U	U	

Analysis Method E625

Phenol	N	108-95-2	ND	0.985	0.493	ug/L	U	U	
Pyrene	N	129-00-0	ND	0.493	0.197	ug/L	U	U	

Analysis Method EPA100.2

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Asbestos	N	1332-21-4	ND	0.99		MFL	U	U	

Analysis Method EPA-821-R-02-013

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	6.55			% SURV			

Analysis Method SM2340

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	55	0.33	0.17	mg/L			

Sample Name Outfall006_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	44	0.33	0.17	mg/L		J	H

Analysis Method SM2540C

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	160	10	5.0	mg/L			

Analysis Method *SM2540D*

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	19	1.7	0.83	mg/L			

Analysis Method *SM4500-CN-E*

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174321-1

Client Project/Site: Annual Outfall 006 Comp

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/28/2017 9:09:09 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/28/2017 9:09:10 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174321-1	Outfall006_20170123_Comp	Water	01/23/17 12:00	01/23/17 15:50
440-174321-2	Outfall006_20170123_Comp_F	Water	01/23/17 12:00	01/23/17 15:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Job ID: 440-174321-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174321-1

Comments

Revised to include AI 200.7- dissolved.

Receipt

The samples were received on 1/23/2017 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 1.9° C and 2.1° C.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385063 and analytical batch 440-385461. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 440-385063 and analytical batch 440-385461 recovered outside control limits for benzidine. This analyte was biased high in the LCS/LCSD and was not detected in the associated samples; therefore, the data have been reported.

Method(s) 625: The laboratory control sample duplicate (LCSD) for preparation batch 440-385063 and analytical batch 440-385461 failed below acceptance limits for the following analytes: 3,3'-dichlorobenzidine; N-nitrosodiphenylamine; and bis (2-chloroethoxy)methane. These analytes are considered poor performers for preparation method 3520C. The affected samples, 440-174321-1 and 440-174433-1, could not be reextracted within hold times and are reported with possible low bias for the failing analytes.

Method(s) 625: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 440-385063 recovered outside control limits for the following analytes: 3,3'-dichlorobenzidine; 1,2-diphenylhydrazine; N-nitrosodiphenylamine; bis(2-chloroethoxy)methane; and benzo(a)pyrene. The affected samples, 440-174321-1 and 174433-1, could not be reextracted within hold times.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 218.6: The continuing calibration verification (CCV) associated with batch 440-383776 recovered above the upper control limit for hexavalent chromium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 218.6: The following sample was received outside of holding time: (440-174234-K-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Extraction technician missed adding surrogate to the Laboratory Control Sample (LCS) associated with batch preparation batch 440-384080 and analytical batch 440-384312. Surrogate recovery was within acceptance limits in Method Blank, Matrix Spike and Matrix Spike Duplicate and samples. Spike recovery was within limits for the LCS. Data not impacted. (LCS 440-384080/5-B)

Method(s) 608: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-384080 and analytical batch 440-384572 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Job ID: 440-174321-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 440-385834 and analytical batch 440-386191 were outside control limits for multiple analytes. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample recovery was within acceptance limits.(440-174321-A-1-C MS) and (440-174321-A-1-D MSD)

Method(s) 200.8: The matrix spike duplicate (MSD) recovery and precision for preparation batch 440-385835 and analytical batch 440-386381 were outside control limits for Copper. Sample non-homogeneity are suspected because the associated laboratory control sample (LCS) was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 525.2: The following sample was received with past holding time. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: Outfall006_20170123_Comp (440-174321-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Method Asbestos 100.2: This method was subcontracted to LA Testing. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		0.97	0.49	ug/L		01/24/17 08:23	01/25/17 15:19	1
Diazinon	ND		0.24	0.12	ug/L		01/24/17 08:23	01/25/17 15:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	99		70 - 130				01/24/17 08:23	01/25/17 15:19	1
Perylene-d12	80		70 - 130				01/24/17 08:23	01/25/17 15:19	1
Triphenylphosphate	125		70 - 130				01/24/17 08:23	01/25/17 15:19	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Acenaphthylene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Anthracene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Benzidine	ND	LQ	9.85	4.93	ug/L		01/29/17 11:31	01/31/17 19:14	1
Benzo[a]anthracene	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
Benzo[b]fluoranthene	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
Benzo[k]fluoranthene	ND		0.493	0.246	ug/L		01/29/17 11:31	01/31/17 19:14	1
Benzo[a]pyrene	ND	BA	1.97	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Bis(2-chloroethoxy)methane	ND	LR BA	0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Bis(2-chloroethyl)ether	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Bis(2-ethylhexyl) phthalate	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
4-Bromophenyl phenyl ether	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Butyl benzyl phthalate	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
4-Chloro-3-methylphenol	ND		1.97	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
2-Chloronaphthalene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
2-Chlorophenol	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
4-Chlorophenyl phenyl ether	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Chrysene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Dibenz(a,h)anthracene	ND		0.493	0.246	ug/L		01/29/17 11:31	01/31/17 19:14	1
Di-n-butyl phthalate	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
1,2-Dichlorobenzene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
1,3-Dichlorobenzene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
1,4-Dichlorobenzene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
3,3'-Dichlorobenzidine	ND	LR BA	4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
2,4-Dichlorophenol	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
Diethyl phthalate	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
2,4-Dimethylphenol	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
Dimethyl phthalate	ND		0.493	0.246	ug/L		01/29/17 11:31	01/31/17 19:14	1
4,6-Dinitro-2-methylphenol	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
2,4-Dinitrophenol	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
2,4-Dinitrotoluene	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
2,6-Dinitrotoluene	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
Di-n-octyl phthalate	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
1,2-Diphenylhydrazine(as Azobenzene)	ND	BA	0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Fluoranthene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Fluorene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Hexachlorobenzene	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Hexachlorobutadiene	ND		1.97	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Hexachloroethane	ND		2.96	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
Indeno[1,2,3-cd]pyrene	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
Isophorone	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Naphthalene	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Nitrobenzene	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
2-Nitrophenol	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
4-Nitrophenol	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
N-Nitrosodimethylamine	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
N-Nitrosodiphenylamine	ND	LR BA	0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
N-Nitrosodi-n-propylamine	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
Pentachlorophenol	ND		1.97	0.985	ug/L		01/29/17 11:31	01/31/17 19:14	1
Phenanthrene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
Phenol	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Pyrene	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1
1,2,4-Trichlorobenzene	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
2,4,6-Trichlorophenol	ND		0.985	0.493	ug/L		01/29/17 11:31	01/31/17 19:14	1
Benzo[g,h,i]perylene	ND		4.93	1.97	ug/L		01/29/17 11:31	01/31/17 19:14	1
bis (2-chloroisopropyl) ether	ND		0.493	0.197	ug/L		01/29/17 11:31	01/31/17 19:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	67		50 - 120	01/29/17 11:31	01/31/17 19:14	1
2-Fluorophenol	61		30 - 120	01/29/17 11:31	01/31/17 19:14	1
2,4,6-Tribromophenol	76		40 - 120	01/29/17 11:31	01/31/17 19:14	1
Nitrobenzene-d5	68		45 - 120	01/29/17 11:31	01/31/17 19:14	1
Terphenyl-d14	64		37 - 144	01/29/17 11:31	01/31/17 19:14	1
Phenol-d6	59		35 - 120	01/29/17 11:31	01/31/17 19:14	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1
Aroclor 1221	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1
Aroclor 1232	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1
Aroclor 1242	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1
Aroclor 1248	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1
Aroclor 1254	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1
Aroclor 1260	ND		0.49	0.24	ug/L		01/24/17 12:17	01/25/17 17:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	81		29 - 115	01/24/17 12:17	01/25/17 17:40	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0049	0.0015	ug/L		01/24/17 12:17	01/26/17 15:20	1
alpha-BHC	ND		0.0049	0.0024	ug/L		01/24/17 12:17	01/26/17 15:20	1
beta-BHC	ND		0.0098	0.0039	ug/L		01/24/17 12:17	01/26/17 15:20	1
Chlordane (technical)	ND		0.098	0.078	ug/L		01/24/17 12:17	01/26/17 15:20	1
delta-BHC	ND		0.0049	0.0034	ug/L		01/24/17 12:17	01/26/17 15:20	1
Dieldrin	ND		0.0049	0.0020	ug/L		01/24/17 12:17	01/26/17 15:20	1
Endosulfan I	ND		0.0049	0.0029	ug/L		01/24/17 12:17	01/26/17 15:20	1
Endosulfan II	ND		0.0049	0.0020	ug/L		01/24/17 12:17	01/26/17 15:20	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		0.0098	0.0029	ug/L		01/24/17 12:17	01/26/17 15:20	1
Endrin	ND		0.0049	0.0020	ug/L		01/24/17 12:17	01/26/17 15:20	1
Endrin aldehyde	ND		0.0098	0.0020	ug/L		01/24/17 12:17	01/26/17 15:20	1
gamma-BHC (Lindane)	ND		0.0098	0.0029	ug/L		01/24/17 12:17	01/26/17 15:20	1
Heptachlor	ND		0.0098	0.0029	ug/L		01/24/17 12:17	01/26/17 15:20	1
Heptachlor epoxide	ND		0.0049	0.0024	ug/L		01/24/17 12:17	01/26/17 15:20	1
Toxaphene	ND		0.49	0.24	ug/L		01/24/17 12:17	01/26/17 15:20	1
4,4'-DDD	ND		0.0049	0.0039	ug/L		01/24/17 12:17	01/26/17 15:20	1
4,4'-DDE	ND		0.0049	0.0029	ug/L		01/24/17 12:17	01/26/17 15:20	1
4,4'-DDT	ND		0.0098	0.0039	ug/L		01/24/17 12:17	01/26/17 15:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	56		10 - 150				01/24/17 12:17	01/26/17 15:20	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND	IB	1.0	0.25	ug/L			01/23/17 19:32	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.4		0.50	0.25	mg/L			01/23/17 21:08	1
Fluoride	ND		0.50	0.25	mg/L			01/23/17 21:08	1
Sulfate	4.0		0.50	0.25	mg/L			01/24/17 15:15	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 11:41	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	3.6		0.15	0.070	mg/L			01/31/17 14:12	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000095	0.000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,7,8-PeCDD	ND		0.000047	0.000005	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,7,8-PeCDF	ND		0.000047	0.000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
2,3,4,7,8-PeCDF	ND		0.000047	0.000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,4,7,8-HxCDD	ND		0.000047	0.000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,6,7,8-HxCDD	ND		0.000047	0.000005	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,7,8,9-HxCDD	ND		0.000047	0.000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,4,7,8-HxCDF	ND		0.000047	0.000005	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,6,7,8-HxCDF	ND		0.000047	0.000005	ug/L		01/26/17 12:45	01/28/17 11:20	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	ND		0.000047	0.0000003	ug/L		01/26/17 12:45	01/28/17 11:20	1
2,3,4,6,7,8-HxCDF	ND		0.000047	0.0000003	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,4,6,7,8-HpCDD	0.000010	J,DX MB	0.000047	0.0000005	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,4,6,7,8-HpCDF	0.0000081	J,DX MB	0.000047	0.0000002	ug/L		01/26/17 12:45	01/28/17 11:20	1
1,2,3,4,7,8,9-HpCDF	0.00000063	J,DX MB	0.000047	0.0000003	ug/L		01/26/17 12:45	01/28/17 11:20	1
OCDD	0.000090	J,DX MB	0.000095	0.0000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
OCDF	0.000012	J,DX MB	0.000095	0.0000003	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total TCDD	ND		0.000095	0.0000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total TCDF	0.0000015	J,DX	0.000095	0.0000002	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total PeCDD	ND		0.000047	0.0000005	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total PeCDF	ND		0.000047	0.0000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total HxCDD	0.0000012	J,DX q	0.000047	0.0000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total HxCDF	0.0000033	J,DX	0.000047	0.0000004	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total HpCDD	0.000023	J,DX MB	0.000047	0.0000005	ug/L		01/26/17 12:45	01/28/17 11:20	1
Total HpCDF	0.000014	J,DX MB	0.000047	0.0000002	ug/L		01/26/17 12:45	01/28/17 11:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	70		25 - 164				01/26/17 12:45	01/28/17 11:20	1
13C-2,3,7,8-TCDF	63		24 - 169				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,7,8-PeCDD	75		25 - 181				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,7,8-PeCDF	66		24 - 185				01/26/17 12:45	01/28/17 11:20	1
13C-2,3,4,7,8-PeCDF	67		21 - 178				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,6,7,8-HxCDF	59		26 - 123				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147				01/26/17 12:45	01/28/17 11:20	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,4,6,7,8-HpCDD	81		23 - 140				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,4,6,7,8-HpCDF	68		28 - 143				01/26/17 12:45	01/28/17 11:20	1
13C-1,2,3,4,7,8,9-HpCDF	77		26 - 138				01/26/17 12:45	01/28/17 11:20	1
13C-OCDD	96		17 - 157				01/26/17 12:45	01/28/17 11:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				01/26/17 12:45	01/28/17 11:20	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000095	0.0000012	ug/L		01/26/17 12:45	01/30/17 19:05	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	61		24 - 169	01/26/17 12:45	01/30/17 19:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197	01/26/17 12:45	01/30/17 19:05	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	650		100	50	ug/L		02/01/17 16:14	02/02/17 17:08	1
Arsenic	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:08	1
Boron	0.070		0.050	0.025	mg/L		02/01/17 16:14	02/02/17 17:08	1
Beryllium	ND		2.0	1.0	ug/L		02/01/17 16:14	02/02/17 17:08	1
Chromium	ND		5.0	2.5	ug/L		02/01/17 16:14	02/02/17 17:08	1
Iron	0.60		0.10	0.050	mg/L		02/01/17 16:14	02/02/17 17:08	1
Nickel	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:08	1
Vanadium	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:08	1
Zinc	ND		20	10	ug/L		02/01/17 16:14	02/02/17 17:08	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/01/17 16:19	02/03/17 11:16	1
Copper	2.7		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:16	1
Lead	0.90	J,DX	1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:16	1
Antimony	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:16	1
Selenium	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:16	1
Thallium	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:16	1
Silver	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:16	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/25/17 12:31	01/26/17 13:37	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	55		0.33	0.17	mg/L			02/06/17 01:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	160		10	5.0	mg/L			01/27/17 11:44	1
Total Suspended Solids	19		1.7	0.83	mg/L			01/27/17 16:40	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1

Client Sample ID: Outfall006_20170123_Comp_F

Lab Sample ID: 440-174321-2

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.0	J,DX QP	10	5.0	ug/L		01/31/17 16:34	02/01/17 14:53	1
Boron	0.060	QP	0.050	0.025	mg/L		01/31/17 16:34	02/01/17 14:53	1
Beryllium	ND	QP	2.0	1.0	ug/L		01/31/17 16:34	02/01/17 14:53	1
Chromium	ND	QP	5.0	2.5	ug/L		01/31/17 16:34	02/01/17 14:53	1
Iron	0.10	QP	0.10	0.050	mg/L		01/31/17 16:34	02/01/17 14:53	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp_F

Lab Sample ID: 440-174321-2

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	QP	10	5.0	ug/L	-	01/31/17 16:34	02/01/17 14:53	1
Vanadium	ND	QP	10	5.0	ug/L	-	01/31/17 16:34	02/01/17 14:53	1
Zinc	ND	QP	20	10	ug/L	-	01/31/17 16:34	02/01/17 14:53	1
Aluminum	120	QP	100	50	ug/L	-	01/31/17 16:34	02/01/17 14:53	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L	-	01/31/17 16:32	02/02/17 11:36	1
Copper	1.8	J,DX QP	2.0	0.50	ug/L	-	01/31/17 16:32	02/04/17 15:55	1
Lead	ND	QP	1.0	0.50	ug/L	-	01/31/17 16:32	02/02/17 11:36	1
Antimony	ND	QP	2.0	0.50	ug/L	-	01/31/17 16:32	02/02/17 11:36	1
Selenium	ND	QP	2.0	0.50	ug/L	-	01/31/17 16:32	02/02/17 11:36	1
Thallium	ND	QP	1.0	0.50	ug/L	-	01/31/17 16:32	02/02/17 11:36	1
Silver	ND	QP	1.0	0.50	ug/L	-	01/31/17 16:32	02/02/17 11:36	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L	-	01/27/17 16:45	01/31/17 14:52	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	44		0.33	0.17	mg/L	-		02/02/17 13:27	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
Asbestos 100.2	EPA 100.2 Asbestos in Drinking Water	NONE	LA Testing
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			1030 mL	1 mL	383995	01/24/17 08:23	FTD	TAL IRV
Total/NA	Analysis	525.2		1			384333	01/25/17 15:19	MF	TAL IRV
Total/NA	Prep	625			1015 mL	2 mL	385063	01/29/17 11:31	BMN	TAL IRV
Total/NA	Analysis	625		1			385461	01/31/17 19:14	DF	TAL IRV
Total/NA	Prep	608			1025 mL	2 mL	384080	01/24/17 12:17	JC1	TAL IRV
Total/NA	Analysis	608 PCB LL		1			384312	01/25/17 17:40	JM	TAL IRV
Total/NA	Prep	608			1025 mL	2 mL	384080	01/24/17 12:17	JC1	TAL IRV
Total/NA	Analysis	608 Pesticides		1			384572	01/26/17 15:20	KS	TAL IRV
Total/NA	Analysis	218.6		1			383776	01/23/17 19:32	MN	TAL IRV
Total/NA	Analysis	300.0		1			383774	01/23/17 21:08	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	384058	01/24/17 15:15	NTN	TAL IRV
Total/NA	Analysis	314.0		1			383991	01/24/17 11:41	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385523	01/31/17 14:12	NN	TAL IRV
Total/NA	Prep	1613B			1058.1 mL	20 uL	147877	01/26/17 12:45	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 11:20	SMA	TAL SAC
Total/NA	Prep	1613B	RA		1058.1 mL	20 uL	147877	01/26/17 12:45	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 19:05	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	385834	02/01/17 16:14	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			386191	02/02/17 17:08	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	385835	02/01/17 16:19	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			386381	02/03/17 11:16	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384334	01/25/17 12:31	DB	TAL IRV
Total/NA	Analysis	245.1		1			384694	01/26/17 13:37	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			386100	02/06/17 01:36	A1S	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384875	01/27/17 11:44	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	384940	01/27/17 16:40	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	384650	01/26/17 15:00	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384744	01/26/17 20:29	SN	TAL IRV

Client Sample ID: Outfall006_20170123_Comp_F

Lab Sample ID: 440-174321-2

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385578	01/31/17 16:34	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			385821	02/01/17 14:53	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385577	01/31/17 16:32	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386210	02/02/17 11:36	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385577	01/31/17 16:32	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386564	02/04/17 15:55	RC	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Client Sample ID: Outfall006_20170123_Comp_F

Lab Sample ID: 440-174321-2

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	384941	01/27/17 16:45	DB	TAL IRV
Dissolved	Analysis	245.1		1			385549	01/31/17 14:52	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			386100	02/02/17 13:27	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383995/1-A
Matrix: Water
Analysis Batch: 384333

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383995

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		01/24/17 08:23	01/25/17 13:28	1
Diazinon	ND		0.25	0.12	ug/L		01/24/17 08:23	01/25/17 13:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	98		70 - 130	01/24/17 08:23	01/25/17 13:28	1
Perylene-d12	95		70 - 130	01/24/17 08:23	01/25/17 13:28	1
Triphenylphosphate	118		70 - 130	01/24/17 08:23	01/25/17 13:28	1

Lab Sample ID: LCS 440-383995/2-A
Matrix: Water
Analysis Batch: 384333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383995

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	5.31		ug/L		106	70 - 130
Diazinon	5.00	4.58		ug/L		92	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	97		70 - 130
Perylene-d12	94		70 - 130
Triphenylphosphate	106		70 - 130

Lab Sample ID: LCSD 440-383995/3-A
Matrix: Water
Analysis Batch: 384333

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383995

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	4.83		ug/L		97	70 - 130	9	30
Diazinon	5.00	4.08		ug/L		82	70 - 130	11	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	94		70 - 130
Perylene-d12	91		70 - 130
Triphenylphosphate	113		70 - 130

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-385063/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Anthracene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzidine	ND		10.0	5.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-385063/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385063

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Chrysene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/29/17 11:31	01/31/17 12:24	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/29/17 11:31	01/31/17 12:24	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Fluoranthene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Fluorene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Isophorone	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Naphthalene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Phenanthrene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Phenol	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Pyrene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-385063/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	68		50 - 120	01/29/17 11:31	01/31/17 12:24	1
2-Fluorophenol	55		30 - 120	01/29/17 11:31	01/31/17 12:24	1
2,4,6-Tribromophenol	69		40 - 120	01/29/17 11:31	01/31/17 12:24	1
Nitrobenzene-d5	65		45 - 120	01/29/17 11:31	01/31/17 12:24	1
Terphenyl-d14	85		37 - 144	01/29/17 11:31	01/31/17 12:24	1
Phenol-d6	66		35 - 120	01/29/17 11:31	01/31/17 12:24	1

Lab Sample ID: LCS 440-385063/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	10.0	7.676		ug/L		77	47 - 145
Acenaphthylene	10.0	8.002		ug/L		80	33 - 145
Anthracene	10.0	8.045		ug/L		80	27 - 133
Benzidine	10.0	7.304	J,DX LQ	ug/L		73	5 - 66
Benzo[a]anthracene	10.0	8.481		ug/L		85	33 - 143
Benzo[b]fluoranthene	10.0	8.826		ug/L		88	24 - 150
Benzo[k]fluoranthene	10.0	8.681		ug/L		87	11 - 150
Benzo[a]pyrene	10.0	8.685		ug/L		87	17 - 150
Bis(2-chloroethoxy)methane	10.0	7.704		ug/L		77	33 - 150
Bis(2-chloroethyl)ether	10.0	7.646		ug/L		76	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.845		ug/L		88	10 - 150
4-Bromophenyl phenyl ether	10.0	8.150		ug/L		81	53 - 127
Butyl benzyl phthalate	10.0	8.758		ug/L		88	10 - 150
4-Chloro-3-methylphenol	10.0	8.082		ug/L		81	22 - 147
2-Chloronaphthalene	10.0	7.624		ug/L		76	60 - 118
2-Chlorophenol	10.0	7.432		ug/L		74	23 - 134
4-Chlorophenyl phenyl ether	10.0	7.723		ug/L		77	25 - 150
Chrysene	10.0	8.279		ug/L		83	17 - 150
Dibenz(a,h)anthracene	10.0	10.26		ug/L		103	10 - 150
Di-n-butyl phthalate	10.0	8.576		ug/L		86	10 - 118
1,2-Dichlorobenzene	10.0	6.763		ug/L		68	32 - 129
1,3-Dichlorobenzene	10.0	6.380		ug/L		64	10 - 150
1,4-Dichlorobenzene	10.0	6.449		ug/L		64	20 - 124
3,3'-Dichlorobenzidine	10.0	8.562		ug/L		86	10 - 150
2,4-Dichlorophenol	10.0	7.595		ug/L		76	39 - 135
Diethyl phthalate	10.0	8.483		ug/L		85	10 - 114
2,4-Dimethylphenol	10.0	7.083		ug/L		71	32 - 119
Dimethyl phthalate	10.0	8.297		ug/L		83	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.03		ug/L		80	10 - 150
2,4-Dinitrophenol	20.0	17.61		ug/L		88	50 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-385063/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrotoluene	10.0	8.555		ug/L		86	39 - 139
2,6-Dinitrotoluene	10.0	8.223		ug/L		82	50 - 150
Di-n-octyl phthalate	10.0	8.918		ug/L		89	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	8.376		ug/L		83	47 - 116
Fluoranthene	10.0	8.453		ug/L		85	26 - 137
Fluorene	10.0	8.206		ug/L		82	59 - 121
Hexachlorobenzene	10.0	7.927		ug/L		79	10 - 150
Hexachlorobutadiene	10.0	5.652		ug/L		57	24 - 116
Hexachloroethane	10.0	6.430		ug/L		64	40 - 113
Hexachlorocyclopentadiene	10.0	3.307	J,DX	ug/L		33	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	9.545		ug/L		95	10 - 150
Isophorone	10.0	8.042		ug/L		80	21 - 150
Naphthalene	10.0	7.027		ug/L		70	21 - 133
Nitrobenzene	10.0	7.512		ug/L		75	35 - 150
2-Nitrophenol	10.0	7.661		ug/L		77	29 - 150
4-Nitrophenol	20.0	15.85		ug/L		79	10 - 132
N-Nitrosodimethylamine	10.0	8.001		ug/L		80	26 - 117
N-Nitrosodiphenylamine	10.0	7.826		ug/L		78	54 - 110
N-Nitrosodi-n-propylamine	10.0	7.824		ug/L		78	10 - 150
Pentachlorophenol	20.0	16.59		ug/L		83	14 - 150
Phenanthrene	10.0	8.014		ug/L		80	54 - 120
Phenol	10.0	7.508		ug/L		75	10 - 112
Pyrene	10.0	7.880		ug/L		79	52 - 115
1,2,4-Trichlorobenzene	10.0	6.836		ug/L		68	44 - 142
2,4,6-Trichlorophenol	10.0	7.951		ug/L		80	37 - 144
Benzo[g,h,i]perylene	10.0	9.763		ug/L		98	10 - 150
bis (2-chloroisopropyl) ether	10.0	7.644		ug/L		76	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	75		50 - 120
2-Fluorophenol	68		30 - 120
2,4,6-Tribromophenol	79		40 - 120
Nitrobenzene-d5	71		45 - 120
Terphenyl-d14	78		37 - 144
Phenol-d6	72		35 - 120

Lab Sample ID: LCSD 440-385063/3-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	10.0	7.432		ug/L		74	47 - 145	3	35
Acenaphthylene	10.0	5.921		ug/L		59	33 - 145	30	35
Anthracene	10.0	7.724		ug/L		77	27 - 133	4	35
Benzidine	10.0	7.093	J,DX LQ	ug/L		71	5 - 66	3	35
Benzo[a]anthracene	10.0	7.981		ug/L		80	33 - 143	6	35
Benzo[b]fluoranthene	10.0	8.655		ug/L		87	24 - 150	2	35

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-385063/3-A

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 385063

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD
									Limit
Benzo[k]fluoranthene	10.0	8.368		ug/L		84	11 - 150	4	35
Benzo[a]pyrene	10.0	4.875	BA	ug/L		49	17 - 150	56	35
Bis(2-chloroethoxy)methane	10.0	2.999	LR BA	ug/L		30	33 - 150	88	35
Bis(2-chloroethyl)ether	10.0	6.903		ug/L		69	12 - 150	10	35
Bis(2-ethylhexyl) phthalate	10.0	8.455		ug/L		85	10 - 150	5	35
4-Bromophenyl phenyl ether	10.0	7.832		ug/L		78	53 - 127	4	35
Butyl benzyl phthalate	10.0	7.466		ug/L		75	10 - 150	16	35
4-Chloro-3-methylphenol	10.0	8.046		ug/L		80	22 - 147	0	35
2-Chloronaphthalene	10.0	7.265		ug/L		73	60 - 118	5	35
2-Chlorophenol	10.0	6.815		ug/L		68	23 - 134	9	35
4-Chlorophenyl phenyl ether	10.0	7.750		ug/L		78	25 - 150	0	35
Chrysene	10.0	7.999		ug/L		80	17 - 150	3	35
Dibenz(a,h)anthracene	10.0	9.270		ug/L		93	10 - 150	10	35
Di-n-butyl phthalate	10.0	8.128		ug/L		81	10 - 118	5	35
1,2-Dichlorobenzene	10.0	6.318		ug/L		63	32 - 129	7	35
1,3-Dichlorobenzene	10.0	5.705		ug/L		57	10 - 150	11	35
1,4-Dichlorobenzene	10.0	5.693		ug/L		57	20 - 124	12	35
3,3'-Dichlorobenzidine	10.0	ND	LR BA	ug/L		4	10 - 150	183	35
2,4-Dichlorophenol	10.0	7.386		ug/L		74	39 - 135	3	35
Diethyl phthalate	10.0	8.496		ug/L		85	10 - 114	0	35
2,4-Dimethylphenol	10.0	7.702		ug/L		77	32 - 119	8	35
Dimethyl phthalate	10.0	8.460		ug/L		85	10 - 112	2	35
4,6-Dinitro-2-methylphenol	20.0	16.12		ug/L		81	10 - 150	1	35
2,4-Dinitrophenol	20.0	17.30		ug/L		86	50 - 150	2	35
2,4-Dinitrotoluene	10.0	8.296		ug/L		83	39 - 139	3	35
2,6-Dinitrotoluene	10.0	8.340		ug/L		83	50 - 150	1	35
Di-n-octyl phthalate	10.0	8.464		ug/L		85	10 - 146	5	35
1,2-Diphenylhydrazine(as Azobenzene)	10.1	4.845	BA	ug/L		48	47 - 116	53	35
Fluoranthene	10.0	8.125		ug/L		81	26 - 137	4	35
Fluorene	10.0	8.167		ug/L		82	59 - 121	0	35
Hexachlorobenzene	10.0	7.505		ug/L		75	10 - 150	5	35
Hexachlorobutadiene	10.0	4.848		ug/L		48	24 - 116	15	35
Hexachloroethane	10.0	5.102		ug/L		51	40 - 113	23	35
Hexachlorocyclopentadiene	10.0	2.648	J,DX	ug/L		26	10 - 67	22	35
Indeno[1,2,3-cd]pyrene	10.0	9.197		ug/L		92	10 - 150	4	35
Isophorone	10.0	7.956		ug/L		80	21 - 150	1	35
Naphthalene	10.0	6.707		ug/L		67	21 - 133	5	35
Nitrobenzene	10.0	7.829		ug/L		78	35 - 150	4	35
2-Nitrophenol	10.0	7.386		ug/L		74	29 - 150	4	35
4-Nitrophenol	20.0	15.65		ug/L		78	10 - 132	1	35
N-Nitrosodimethylamine	10.0	6.850		ug/L		69	26 - 117	15	35
N-Nitrosodiphenylamine	10.0	4.702	LR BA	ug/L		47	54 - 110	50	35
N-Nitrosodi-n-propylamine	10.0	7.604		ug/L		76	10 - 150	3	35
Pentachlorophenol	20.0	15.99		ug/L		80	14 - 150	4	35
Phenanthrene	10.0	7.790		ug/L		78	54 - 120	3	35
Phenol	10.0	6.041		ug/L		60	10 - 112	22	35
Pyrene	10.0	7.476		ug/L		75	52 - 115	5	35

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-385063/3-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,4-Trichlorobenzene	10.0	6.187		ug/L		62	44 - 142	10	35
2,4,6-Trichlorophenol	10.0	7.347		ug/L		73	37 - 144	8	35
Benzo[g,h,i]perylene	10.0	8.561		ug/L		86	10 - 150	13	35
bis (2-chloroisopropyl) ether	10.0	6.914		ug/L		69	47 - 103	10	35

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	57		30 - 120
2,4,6-Tribromophenol	76		40 - 120
Nitrobenzene-d5	70		45 - 120
Terphenyl-d14	79		37 - 144
Phenol-d6	65		35 - 120

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-384080/1-A
Matrix: Water
Analysis Batch: 384312

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384080

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	72		29 - 115	01/24/17 12:17	01/25/17 12:58	1

Lab Sample ID: LCS 440-384080/5-B
Matrix: Water
Analysis Batch: 384312

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	3.81		ug/L		95	50 - 115
Aroclor 1260	4.00	3.94		ug/L		99	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
DCB Decachlorobiphenyl (Surr)	4	LG	29 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: 440-174317-G-1-D MS

Matrix: Water
Analysis Batch: 384312

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aroclor 1016	ND		3.79	2.63		ug/L		69	45 - 120
Aroclor 1260	ND		3.79	3.42		ug/L		90	55 - 125
MS MS									
Surrogate	%Recovery		Qualifier	Limits					
DCB Decachlorobiphenyl (Surr)	46			29 - 115					

Lab Sample ID: 440-174317-R-1-B MSD

Matrix: Water
Analysis Batch: 384312

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Aroclor 1016	ND		3.81	2.60		ug/L		68	45 - 120	16	30
Aroclor 1260	ND		3.81	3.49		ug/L		92	55 - 125	3	25
MSD MSD											
Surrogate	%Recovery		Qualifier	Limits							
DCB Decachlorobiphenyl (Surr)	45			29 - 115							

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-384080/1-A

Matrix: Water
Analysis Batch: 384572

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384080

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aldrin	ND		0.0050	0.0015	ug/L		01/24/17 12:17	01/26/17 12:38	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/24/17 12:17	01/26/17 12:38	1
beta-BHC	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/24/17 12:17	01/26/17 12:38	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/24/17 12:17	01/26/17 12:38	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endrin	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Heptachlor	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/24/17 12:17	01/26/17 12:38	1
Toxaphene	ND		0.50	0.25	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
MB MB									
Surrogate	%Recovery		Qualifier	Limits		Prepared		Analyzed	Dil Fac
Tetrachloro-m-xylene	66			10 - 150		01/24/17 12:17		01/26/17 12:38	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-384080/2-A
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.200	0.107		ug/L		53	42 - 122
alpha-BHC	0.200	0.147		ug/L		73	37 - 134
beta-BHC	0.200	0.127		ug/L		63	17 - 147
delta-BHC	0.200	0.145		ug/L		72	19 - 140
Dieldrin	0.200	0.160		ug/L		80	36 - 146
Endosulfan I	0.200	0.157		ug/L		79	45 - 150
Endosulfan II	0.200	0.158		ug/L		79	10 - 150
Endosulfan sulfate	0.200	0.158		ug/L		79	26 - 144
Endrin	0.200	0.163		ug/L		82	30 - 147
Endrin aldehyde	0.200	0.157		ug/L		78	47 - 115
gamma-BHC (Lindane)	0.200	0.161		ug/L		80	32 - 127
Heptachlor	0.200	0.157		ug/L		79	34 - 115
Heptachlor epoxide	0.200	0.172		ug/L		86	37 - 142
4,4'-DDD	0.200	0.150		ug/L		75	31 - 141
4,4'-DDE	0.200	0.149		ug/L		75	30 - 145
4,4'-DDT	0.200	0.174		ug/L		87	25 - 150
Surrogate		LCS %Recovery	LCS Qualifier				Limits
Tetrachloro-m-xylene		66					10 - 150

Lab Sample ID: 440-174317-G-1-C MSD
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aldrin	ND		0.204	0.104		ug/L		51	35 - 120	12	30
alpha-BHC	ND		0.204	0.121		ug/L		59	40 - 120	16	30
beta-BHC	ND		0.204	0.108		ug/L		53	50 - 120	15	30
delta-BHC	ND		0.204	0.113		ug/L		55	50 - 120	13	30
Dieldrin	ND		0.204	0.126		ug/L		62	50 - 120	19	30
Endosulfan I	ND		0.204	0.116		ug/L		57	50 - 120	14	30
Endosulfan II	ND		0.204	0.125		ug/L		61	50 - 125	16	30
Endosulfan sulfate	ND		0.204	0.120		ug/L		59	55 - 125	12	30
Endrin	ND		0.204	0.129		ug/L		63	50 - 120	15	30
Endrin aldehyde	ND		0.204	0.132		ug/L		65	45 - 125	19	30
gamma-BHC (Lindane)	ND		0.204	0.132		ug/L		65	40 - 120	17	30
Heptachlor	ND		0.204	0.128		ug/L		63	40 - 120	16	30
Heptachlor epoxide	ND		0.204	0.134		ug/L		66	50 - 120	15	30
4,4'-DDD	ND		0.204	0.119		ug/L		58	50 - 125	17	30
4,4'-DDE	ND		0.204	0.109		ug/L		53	45 - 125	15	30
4,4'-DDT	ND		0.204	0.133		ug/L		65	50 - 125	16	30
Surrogate		MSD %Recovery	MSD Qualifier								
Tetrachloro-m-xylene		54									

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-174317-H-1-A MS

Matrix: Water

Analysis Batch: 384572

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 384080

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Aldrin	ND		0.191	0.0921		ug/L		48	35 - 120
alpha-BHC	ND		0.191	0.103		ug/L		54	40 - 120
beta-BHC	ND		0.191	0.0926	LN	ug/L		48	50 - 120
delta-BHC	ND		0.191	0.0990		ug/L		52	50 - 120
Dieldrin	ND		0.191	0.104		ug/L		54	50 - 120
Endosulfan I	ND		0.191	0.100		ug/L		52	50 - 120
Endosulfan II	ND		0.191	0.106		ug/L		56	50 - 125
Endosulfan sulfate	ND		0.191	0.106		ug/L		55	55 - 125
Endrin	ND		0.191	0.111		ug/L		58	50 - 120
Endrin aldehyde	ND		0.191	0.110		ug/L		57	45 - 125
gamma-BHC (Lindane)	ND		0.191	0.112		ug/L		58	40 - 120
Heptachlor	ND		0.191	0.109		ug/L		57	40 - 120
Heptachlor epoxide	ND		0.191	0.115		ug/L		60	50 - 120
4,4'-DDD	ND		0.191	0.100		ug/L		52	50 - 125
4,4'-DDE	ND		0.191	0.0941		ug/L		49	45 - 125
4,4'-DDT	ND		0.191	0.113		ug/L		59	50 - 125

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	47		10 - 150

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-383776/3

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chromium, hexavalent	ND	IB	1.0	0.25	ug/L			01/23/17 09:50	1

Lab Sample ID: LCS 440-383776/2

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

Lab Sample ID: MRL 440-383776/4

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND	IB	50.0	53.6	IB	ug/L		107	90 - 110

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND	IB	50.0	53.9	IB	ug/L		108	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383774/4
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 10:09	1
Fluoride	ND		0.50	0.25	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383774/2
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.82		mg/L		96	90 - 110
Fluoride	5.00	4.61		mg/L		92	90 - 110

Lab Sample ID: 440-174262-A-4 MS
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	83		25.0	110		mg/L		108	80 - 120
Fluoride	ND		25.0	22.7		mg/L		91	80 - 120

Lab Sample ID: 440-174262-A-4 MSD
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	83		25.0	110		mg/L		107	80 - 120	0	20
Fluoride	ND		25.0	22.8		mg/L		91	80 - 120	0	20

Lab Sample ID: MB 440-384058/4
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		0.50	0.25	mg/L			01/24/17 13:33	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-384058/2
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	5.00		mg/L		100	90 - 110

Lab Sample ID: 440-174317-C-1 MS
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	120		250	363		mg/L		98	80 - 120

Lab Sample ID: 440-174317-C-1 MSD
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	120		250	364		mg/L		98	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-383991/3
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 09:22	1

Lab Sample ID: LCS 440-383991/2
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	24.0		ug/L		96	85 - 115

Lab Sample ID: MRL 440-383991/5
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.84	J,DX	ug/L		96	75 - 125

Lab Sample ID: 440-174317-B-1 MS
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	28.2		ug/L		113	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: 440-174317-B-1 MSD
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	28.6		ug/L		114	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.0000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	0.00000700	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
				9					
				6					
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164				01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147				01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143				01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138				01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157				01/26/17 08:49	01/27/17 20:13	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				01/26/17 08:49	01/27/17 20:13	1

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

LCS LCS			
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199
LCS LCS			
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

LCSD LCSD			
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

<i>Isotope Dilution</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

<i>Surrogate</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-385578/2-A
Matrix: Water
Analysis Batch: 385821

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385578

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Arsenic	ND		10	5.0	ug/L		01/31/17 16:34	02/01/17 14:48	1
Boron	ND		0.050	0.025	mg/L		01/31/17 16:34	02/01/17 14:48	1
Beryllium	ND		2.0	1.0	ug/L		01/31/17 16:34	02/01/17 14:48	1
Chromium	ND		5.0	2.5	ug/L		01/31/17 16:34	02/01/17 14:48	1
Iron	ND		0.10	0.050	mg/L		01/31/17 16:34	02/01/17 14:48	1
Nickel	ND		10	5.0	ug/L		01/31/17 16:34	02/01/17 14:48	1
Vanadium	ND		10	5.0	ug/L		01/31/17 16:34	02/01/17 14:48	1
Zinc	ND		20	10	ug/L		01/31/17 16:34	02/01/17 14:48	1
Aluminum	ND		100	50	ug/L		01/31/17 16:34	02/01/17 14:48	1

Lab Sample ID: LCS 440-385578/1-A
Matrix: Water
Analysis Batch: 385821

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385578

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
Arsenic	500	468		ug/L		94	85 - 115
Barium	0.500	0.463		mg/L		93	85 - 115
Boron	0.500	0.450		mg/L		90	85 - 115
Beryllium	500	463		ug/L		93	85 - 115
Calcium	2.50	2.33		mg/L		93	85 - 115
Cobalt	500	466		ug/L		93	85 - 115
Chromium	500	489		ug/L		98	85 - 115
Iron	0.500	0.471		mg/L		94	85 - 115
Magnesium	2.50	2.33		mg/L		93	85 - 115
Manganese	500	488		ug/L		98	85 - 115
Nickel	500	493		ug/L		99	85 - 115
Vanadium	500	465		ug/L		93	85 - 115
Zinc	500	459		ug/L		92	85 - 115
Aluminum	500	445		ug/L		89	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: MB 440-385834/1-A
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Boron	ND		0.050	0.025	mg/L		02/01/17 16:14	02/02/17 17:03	1
Beryllium	ND		2.0	1.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Chromium	ND		5.0	2.5	ug/L		02/01/17 16:14	02/02/17 17:03	1
Iron	ND		0.10	0.050	mg/L		02/01/17 16:14	02/02/17 17:03	1
Nickel	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Vanadium	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Zinc	ND		20	10	ug/L		02/01/17 16:14	02/02/17 17:03	1
Aluminum	ND		100	50	ug/L		02/01/17 16:14	02/02/17 17:03	1

Lab Sample ID: LCS 440-385834/2-A
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	512		ug/L		102	85 - 115
Boron	0.500	0.493		mg/L		99	85 - 115
Beryllium	500	501		ug/L		100	85 - 115
Calcium	2.50	2.68		mg/L		107	85 - 115
Chromium	500	530		ug/L		106	85 - 115
Iron	0.500	0.524		mg/L		105	85 - 115
Magnesium	2.50	2.58		mg/L		103	85 - 115
Nickel	500	542		ug/L		108	85 - 115
Silver	250	233		ug/L		93	85 - 115
Vanadium	500	501		ug/L		100	85 - 115
Zinc	500	498		ug/L		100	85 - 115
Aluminum	500	475		ug/L		95	85 - 115

Lab Sample ID: 440-174321-1 MS
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Outfall006_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		500	498		ug/L		100	70 - 130
Boron	0.070		0.500	0.549		mg/L		96	70 - 130
Beryllium	ND		500	502		ug/L		100	70 - 130
Calcium	19		2.50	21.5	BB	mg/L		116	70 - 130
Chromium	ND		500	516		ug/L		103	70 - 130
Iron	0.60		0.500	1.59	LM	mg/L		198	70 - 130
Magnesium	2.1		2.50	4.66		mg/L		104	70 - 130
Nickel	ND		500	502		ug/L		100	70 - 130
Silver	ND		250	226		ug/L		91	70 - 130
Vanadium	ND		500	497		ug/L		99	70 - 130
Zinc	ND		500	493		ug/L		99	70 - 130
Aluminum	650		500	1820	LM	ug/L		233	70 - 130

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174321-1 MSD

Matrix: Water

Analysis Batch: 386191

Client Sample ID: Outfall006_20170123_Comp

Prep Type: Total Recoverable

Prep Batch: 385834

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Arsenic	ND		500	527		ug/L		105	70 - 130	6	20	
Boron	0.070		0.500	0.583		mg/L		103	70 - 130	6	20	
Beryllium	ND		500	533		ug/L		107	70 - 130	6	20	
Calcium	19		2.50	22.8	BB	mg/L		168	70 - 130	6	20	
Chromium	ND		500	547		ug/L		109	70 - 130	6	20	
Iron	0.60		0.500	2.00	LM BA	mg/L		280	70 - 130	23	20	
Magnesium	2.1		2.50	5.01		mg/L		118	70 - 130	7	20	
Nickel	ND		500	522		ug/L		104	70 - 130	4	20	
Silver	ND		250	239		ug/L		96	70 - 130	6	20	
Vanadium	ND		500	524		ug/L		105	70 - 130	5	20	
Zinc	ND		500	518		ug/L		104	70 - 130	5	20	
Aluminum	650		500	2420	LM BA	ug/L		353	70 - 130	28	20	

Lab Sample ID: 440-174321-2 MS

Matrix: Water

Analysis Batch: 385821

Client Sample ID: Outfall006_20170123_Comp_F

Prep Type: Dissolved

Prep Batch: 385578

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Arsenic	7.0	J,DX QP	500	469		ug/L		92	70 - 130			
Barium	0.016	QP	0.500	0.471		mg/L		91	70 - 130			
Boron	0.060	QP	0.500	0.503		mg/L		89	70 - 130			
Beryllium	ND	QP	500	468		ug/L		94	70 - 130			
Calcium	15	QP	2.50	17.5	BB	mg/L		96	70 - 130			
Cobalt	ND	QP	500	460		ug/L		92	70 - 130			
Chromium	ND	QP	500	483		ug/L		97	70 - 130			
Iron	0.10	QP	0.500	0.554		mg/L		90	70 - 130			
Magnesium	1.6	QP	2.50	3.84		mg/L		91	70 - 130			
Manganese	ND	QP	500	483		ug/L		97	70 - 130			
Nickel	ND	QP	500	484		ug/L		97	70 - 130			
Vanadium	ND	QP	500	460		ug/L		92	70 - 130			
Zinc	ND	QP	500	452		ug/L		90	70 - 130			
Aluminum	120	QP	500	558		ug/L		87	70 - 130			

Lab Sample ID: 440-174321-2 MSD

Matrix: Water

Analysis Batch: 385821

Client Sample ID: Outfall006_20170123_Comp_F

Prep Type: Dissolved

Prep Batch: 385578

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
				Result	Qualifier				Limits	RPD		
Arsenic	7.0	J,DX QP	500	466		ug/L		92	70 - 130	1	20	
Barium	0.016	QP	0.500	0.473		mg/L		91	70 - 130	0	20	
Boron	0.060	QP	0.500	0.507		mg/L		89	70 - 130	1	20	
Beryllium	ND	QP	500	465		ug/L		93	70 - 130	1	20	
Calcium	15	QP	2.50	17.2	BB	mg/L		88	70 - 130	1	20	
Cobalt	ND	QP	500	457		ug/L		91	70 - 130	1	20	
Chromium	ND	QP	500	483		ug/L		97	70 - 130	0	20	
Iron	0.10	QP	0.500	0.566		mg/L		92	70 - 130	2	20	
Magnesium	1.6	QP	2.50	3.88		mg/L		92	70 - 130	1	20	
Manganese	ND	QP	500	485		ug/L		97	70 - 130	0	20	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174321-2 MSD
Matrix: Water
Analysis Batch: 385821

Client Sample ID: Outfall006_20170123_Comp_F
Prep Type: Dissolved
Prep Batch: 385578

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Nickel	ND	QP	500	484		ug/L		97	70 - 130	0	20
Vanadium	ND	QP	500	464		ug/L		93	70 - 130	1	20
Zinc	ND	QP	500	454		ug/L		91	70 - 130	1	20
Aluminum	120	QP	500	568		ug/L		89	70 - 130	2	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-385577/2-A
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		01/31/17 16:32	02/02/17 11:21	1
Lead	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Antimony	ND		2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Selenium	ND		2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Thallium	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Silver	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1

Lab Sample ID: MB 440-385577/2-A
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Copper	ND		2.0	0.50	ug/L		01/31/17 16:32	02/04/17 15:40	1

Lab Sample ID: LCS 440-385577/1-A
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Cadmium	80.0	69.2		ug/L		87	85 - 115
Lead	80.0	69.5		ug/L		87	85 - 115
Antimony	80.0	80.3		ug/L		100	85 - 115
Selenium	80.0	69.9		ug/L		87	85 - 115
Thallium	80.0	70.1		ug/L		88	85 - 115
Silver	80.0	68.4		ug/L		86	85 - 115

Lab Sample ID: LCS 440-385577/1-A
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Copper	80.0	74.0		ug/L		92	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-385835/1-A
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Cadmium	ND		1.0	0.25	ug/L		02/01/17 16:19	02/03/17 11:13		1
Copper	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13		1
Lead	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13		1
Antimony	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13		1
Selenium	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13		1
Thallium	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13		1
Silver	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13		1

Lab Sample ID: LCS 440-385835/2-A
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	74.3		ug/L		93	85 - 115
Copper	80.0	72.6		ug/L		91	85 - 115
Lead	80.0	72.9		ug/L		91	85 - 115
Antimony	80.0	82.4		ug/L		103	85 - 115
Selenium	80.0	76.1		ug/L		95	85 - 115
Thallium	80.0	74.7		ug/L		93	85 - 115
Silver	80.0	74.3		ug/L		93	85 - 115

Lab Sample ID: 440-174321-1 MS
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Outfall006_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	73.4		ug/L		92	70 - 130
Copper	2.7		80.0	74.5		ug/L		90	70 - 130
Lead	0.90	J,DX	80.0	73.3		ug/L		91	70 - 130
Antimony	ND		80.0	81.8		ug/L		102	70 - 130
Selenium	ND		80.0	72.4		ug/L		90	70 - 130
Thallium	ND		80.0	75.6		ug/L		95	70 - 130
Silver	ND		80.0	73.4		ug/L		92	70 - 130

Lab Sample ID: 440-174321-1 MSD
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Outfall006_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	ND		80.0	74.7		ug/L		93	70 - 130	2	20
Copper	2.7		80.0	142	LM BA	ug/L		174	70 - 130	62	20
Lead	0.90	J,DX	80.0	73.8		ug/L		91	70 - 130	1	20
Antimony	ND		80.0	83.5		ug/L		104	70 - 130	2	20
Selenium	ND		80.0	74.6		ug/L		93	70 - 130	3	20
Thallium	ND		80.0	76.5		ug/L		96	70 - 130	1	20
Silver	ND		80.0	74.7		ug/L		93	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174317-A-2-K MS
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Cadmium	ND	QP	80.0	70.2		ug/L		88	70 - 130	
Lead	ND	QP	80.0	71.5		ug/L		89	70 - 130	
Antimony	ND	QP	80.0	83.6		ug/L		105	70 - 130	
Selenium	ND	QP	80.0	72.4		ug/L		91	70 - 130	
Thallium	ND	QP	80.0	70.8		ug/L		88	70 - 130	
Silver	ND	QP	80.0	69.8		ug/L		87	70 - 130	

Lab Sample ID: 440-174317-A-2-K MS
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Copper	1.8	J,DX QP	80.0	68.9		ug/L		84	70 - 130	

Lab Sample ID: 440-174317-A-2-L MSD
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	71.4		ug/L		89	70 - 130	2	20
Lead	ND	QP	80.0	72.7		ug/L		91	70 - 130	2	20
Antimony	ND	QP	80.0	85.4		ug/L		107	70 - 130	2	20
Selenium	ND	QP	80.0	71.7		ug/L		90	70 - 130	1	20
Thallium	ND	QP	80.0	71.7		ug/L		90	70 - 130	1	20
Silver	ND	QP	80.0	70.8		ug/L		88	70 - 130	1	20

Lab Sample ID: 440-174317-A-2-L MSD
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385577

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Copper	1.8	J,DX QP	80.0	72.3		ug/L		88	70 - 130	5	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384334/1-A
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384334

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/25/17 12:31	01/26/17 13:00	1

Lab Sample ID: LCS 440-384334/2-A
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384334

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	8.11		ug/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-174175-G-7-B MS
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384334
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.67		ug/L		108	70 - 130

Lab Sample ID: 440-174175-G-7-C MSD
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384334
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.23		ug/L		103	70 - 130	5	20

Lab Sample ID: MB 440-384878/1-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 384941

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:14	1

Lab Sample ID: LCS 440-384878/2-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 384941
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.63		ug/L		95	85 - 115

Lab Sample ID: 440-174317-A-2-E MS
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 384941
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.36		ug/L		92	70 - 130

Lab Sample ID: 440-174317-A-2-F MSD
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 384941
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	7.42		ug/L		93	70 - 130	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384875/1
Matrix: Water
Analysis Batch: 384875

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/27/17 11:44	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-384875/2
Matrix: Water
Analysis Batch: 384875

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	962		mg/L		96	90 - 110

Lab Sample ID: 440-174415-F-4 DU
Matrix: Water
Analysis Batch: 384875

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	200		204		mg/L		1	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-384940/1
Matrix: Water
Analysis Batch: 384940

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/27/17 16:40	1

Lab Sample ID: LCS 440-384940/2
Matrix: Water
Analysis Batch: 384940

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1030		mg/L		103	85 - 115

Lab Sample ID: 440-174889-B-1 DU
Matrix: Water
Analysis Batch: 384940

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	300		284		mg/L		4	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-384650/1-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1

Lab Sample ID: LCS 440-384650/2-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	101		ug/L		101	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCSD 440-384650/3-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	101		ug/L		101	90 - 110	1	10

Lab Sample ID: 440-174317-P-1-D MS
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	101		ug/L		101	70 - 115		

Lab Sample ID: 440-174317-P-1-E MSD
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	2	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

GC/MS Semi VOA

Prep Batch: 383995

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	525.2	
MB 440-383995/1-A	Method Blank	Total/NA	Water	525.2	
LCS 440-383995/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-383995/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	

Analysis Batch: 384333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	525.2	383995
MB 440-383995/1-A	Method Blank	Total/NA	Water	525.2	383995
LCS 440-383995/2-A	Lab Control Sample	Total/NA	Water	525.2	383995
LCSD 440-383995/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	383995

Prep Batch: 385063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	625	
MB 440-385063/1-A	Method Blank	Total/NA	Water	625	
LCS 440-385063/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-385063/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 385461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	625	385063
MB 440-385063/1-A	Method Blank	Total/NA	Water	625	385063
LCS 440-385063/2-A	Lab Control Sample	Total/NA	Water	625	385063
LCSD 440-385063/3-A	Lab Control Sample Dup	Total/NA	Water	625	385063

GC Semi VOA

Prep Batch: 384080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	608	
MB 440-384080/1-A	Method Blank	Total/NA	Water	608	
LCS 440-384080/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-384080/5-B	Lab Control Sample	Total/NA	Water	608	
440-174317-G-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-174317-G-1-D MS	Matrix Spike	Total/NA	Water	608	
440-174317-H-1-A MS	Matrix Spike	Total/NA	Water	608	
440-174317-R-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608	

Analysis Batch: 384312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	608 PCB LL	384080
MB 440-384080/1-A	Method Blank	Total/NA	Water	608 PCB LL	384080
LCS 440-384080/5-B	Lab Control Sample	Total/NA	Water	608 PCB LL	384080
440-174317-G-1-D MS	Matrix Spike	Total/NA	Water	608 PCB LL	384080
440-174317-R-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	608 PCB LL	384080

Analysis Batch: 384572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	608 Pesticides	384080

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

GC Semi VOA (Continued)

Analysis Batch: 384572 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-384080/1-A	Method Blank	Total/NA	Water	608 Pesticides	384080
LCS 440-384080/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	384080
440-174317-G-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	384080
440-174317-H-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	384080

HPLC/IC

Analysis Batch: 383774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	300.0	
MB 440-383774/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383774/2	Lab Control Sample	Total/NA	Water	300.0	
440-174262-A-4 MS	Matrix Spike	Total/NA	Water	300.0	
440-174262-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 383776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	218.6	
MB 440-383776/3	Method Blank	Total/NA	Water	218.6	
LCS 440-383776/2	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-383776/4	Lab Control Sample	Total/NA	Water	218.6	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	218.6	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	218.6	

Analysis Batch: 383991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	314.0	
MB 440-383991/3	Method Blank	Total/NA	Water	314.0	
LCS 440-383991/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-383991/5	Lab Control Sample	Total/NA	Water	314.0	
440-174317-B-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-174317-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 384058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	300.0	
MB 440-384058/4	Method Blank	Total/NA	Water	300.0	
LCS 440-384058/2	Lab Control Sample	Total/NA	Water	300.0	
440-174317-C-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-174317-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 385523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	1613B	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Specialty Organics (Continued)

Prep Batch: 147877 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1 - RA	Outfall006_20170123_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1 - RA	Outfall006_20170123_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	245.1	
MB 440-384334/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384334/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174175-G-7-B MS	Matrix Spike	Total/NA	Water	245.1	
440-174175-G-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 384694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	245.1	384334
MB 440-384334/1-A	Method Blank	Total/NA	Water	245.1	384334
LCS 440-384334/2-A	Lab Control Sample	Total/NA	Water	245.1	384334
440-174175-G-7-B MS	Matrix Spike	Total/NA	Water	245.1	384334
440-174175-G-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	384334

Filtration Batch: 384878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	FILTRATION	
MB 440-384878/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174321-2 MS	Outfall006_20170123_Comp_F	Dissolved	Water	FILTRATION	
440-174321-2 MSD	Outfall006_20170123_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Metals (Continued)

Prep Batch: 384941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	245.1	384878
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384878
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384878
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	384878
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	384878

Analysis Batch: 385549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	245.1	384941
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384941
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384941
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	384941
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	384941

Prep Batch: 385577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	200.2	384878
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	200.2	384878
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	384878

Prep Batch: 385578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	200.2	384878
MB 440-385578/2-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385578/1-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174321-2 MS	Outfall006_20170123_Comp_F	Dissolved	Water	200.2	384878
440-174321-2 MSD	Outfall006_20170123_Comp_F	Dissolved	Water	200.2	384878

Analysis Batch: 385821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385578
MB 440-385578/2-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385578
LCS 440-385578/1-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385578
440-174321-2 MS	Outfall006_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385578
440-174321-2 MSD	Outfall006_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385578

Prep Batch: 385834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total Recoverable	Water	200.2	
MB 440-385834/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385834/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174321-1 MS	Outfall006_20170123_Comp	Total Recoverable	Water	200.2	
440-174321-1 MSD	Outfall006_20170123_Comp	Total Recoverable	Water	200.2	

Prep Batch: 385835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total Recoverable	Water	200.2	
MB 440-385835/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385835/2-A	Lab Control Sample	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Metals (Continued)

Prep Batch: 385835 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1 MS	Outfall006_20170123_Comp	Total Recoverable	Water	200.2	
440-174321-1 MSD	Outfall006_20170123_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 386100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total Recoverable	Water	SM 2340B	
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 386191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	385834
MB 440-385834/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385834
LCS 440-385834/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385834
440-174321-1 MS	Outfall006_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	385834
440-174321-1 MSD	Outfall006_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	385834

Analysis Batch: 386210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	200.8	385577
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.8	385577
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.8	385577
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	200.8	385577
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	385577

Analysis Batch: 386381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total Recoverable	Water	200.8	385835
MB 440-385835/1-A	Method Blank	Total Recoverable	Water	200.8	385835
LCS 440-385835/2-A	Lab Control Sample	Total Recoverable	Water	200.8	385835
440-174321-1 MS	Outfall006_20170123_Comp	Total Recoverable	Water	200.8	385835
440-174321-1 MSD	Outfall006_20170123_Comp	Total Recoverable	Water	200.8	385835

Analysis Batch: 386564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-2	Outfall006_20170123_Comp_F	Dissolved	Water	200.8	385577
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.8	385577
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.8	385577
440-174317-A-2-K MS	Matrix Spike	Dissolved	Water	200.8	385577
440-174317-A-2-L MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	385577

General Chemistry

Prep Batch: 384650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	Distill/CN	
MB 440-384650/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174317-P-1-D MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174317-P-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

General Chemistry (Continued)

Analysis Batch: 384744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	SM 4500 CN E	384650
MB 440-384650/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	384650
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	384650
LCSD 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	384650
440-174317-P-1-D MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	384650
440-174317-P-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	384650

Analysis Batch: 384875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	SM 2540C	
MB 440-384875/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384875/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174415-F-4 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 384940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	SM 2540D	
MB 440-384940/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-384940/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174889-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
BA	Relative percent difference out of control
LR	LCS/LCSD recovery below method control limits
LQ	LCS/LCSD recovery above method control limits
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

GC Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
IB	CCV recovery above limit; analyte not detected
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
BB	Sample > 4X spike concentration
BA	Relative percent difference out of control
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Glossary (Continued)

Abbreviation **These commonly used abbreviations may or may not be present in this report.**

TEF Toxicity Equivalent Factor (Dioxin)

TEQ Toxicity Equivalent Quotient (Dioxin)

1

2

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Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17 *
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17 *
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



LA Testing

520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com> / pasadenalab@latesting.com

LA Testing Order ID: 321701535
Customer ID: TEST72
Customer PO:
Project ID:

Attn: Patty Mata
TestAmerica - Irvine, CA
17461 Derian Avenue
Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 260-3297
Collected: 01/23/2017
Received: 01/25/2017
Analyzed: 02/03/2017
Proj: 440-106776.1 / 440-174321-1 / 44009879 / Annual Outfall 006 Comp

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm ²)	Area Analyzed (mm ²)	ASBESTOS				
					Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration MFL (million fibers per liter)	Confidence Limits
Outfall006_20170123_Co 321701535-0001	1/25/2017 10:20 AM	5	1288	0.2600	None Detected	ND	0.99	<0.99	0.00 - 3.70

Due to excessive particulate the analytical sensitivity of 0.2 MFL as required by the method was not reached.

Analyst(s)
Sherrie Ahmad (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 02/03/2017 09:54:05

Sample collection and containers provided by the client, acceptable bottle blank level is defined as ≤0.01MFL>10µm. ND=None Detected. This report relates only to those items tested. This report may not be reproduced, except in full, without written permission by LA Testing. Samples received in good condition unless otherwise noted.

Samples analyzed by LA Testing South Pasadena, CA CA ELAP 2283



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall006_20170123__Comp (440-174321-1)
DATE RECEIVED: 24 Jan - 17
ABC LAB NO.: TAM0117.198

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 6.55 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 08 Feb-17 16:46 (p 1 of 1)
 Test Code: TAM0117.198sel | 17-2418-6894

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 18-7358-1921	Test Type: Cell Growth	Analyst:
Start Date: 24 Jan-17 16:16	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 28 Jan-17 14:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-7292-3588	Code: TAM0117.198s	Client: Test America Irvine
Sample Date: 22 Jan-17 22:21	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report	
Sample Age: 42h (2.1 °C)	Station: Outfall006_20170123_Comp (440-174321-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
07-0220-7023	Cell Density	TST-Welch's t Test	2.1E-04	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
07-0220-7023	Cell Density	Control CV	0.02655	<<	0.2	Yes	Passes Criteria
07-0220-7023	Cell Density	Control Resp	1.44E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.438E+6	1.407E+6	1.470E+6	1.389E+6	1.516E+6	1.351E+4	3.820E+4	2.66%	0.00%
100		8	1.344E+6	1.247E+6	1.442E+6	1.186E+6	1.510E+6	4.130E+4	1.168E+5	8.69%	6.55%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.456E+6	1.412E+6	1.389E+6	1.417E+6	1.516E+6	1.449E+6	1.426E+6	1.443E+6
100		1.224E+6	1.186E+6	1.411E+6	1.510E+6	1.375E+6	1.468E+6	1.321E+6	1.259E+6

CETIS Analytical Report

Report Date: 08 Feb-17 16:46 (p 1 of 2)
 Test Code: TAM0117.198sel | 17-2418-6894

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 07-0220-7023	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 08 Feb-17 16:46	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes	
Batch ID: 18-7358-1921	Test Type: Cell Growth	Analyst:	
Start Date: 24 Jan-17 16:16	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 28 Jan-17 14:30	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 94h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 18-7292-3588	Code: TAM0117.198s	Client: Test America Irvine	
Sample Date: 22 Jan-17 22:21	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls	
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report		
Sample Age: 42h (2.1 °C)	Station: Outfall006_20170123_Comp (440-174321-		

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	6.241	0.7111	7	CDF	2.1E-04	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02655	<<	0.2	Yes	Passes Criteria
Control Resp	1.44E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	3.553E+10	3.553E+10	1	4.706	0.0478	Significant Effect
Error	1.057E+11	7.551E+09	14			
Total	1.412E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	10.84	8.862	0.0053	Unequal Variances
Variances	Mod Levene Equality of Variance Test	10.73	8.862	0.0055	Unequal Variances
Variances	Variance Ratio F Test	9.35	8.885	0.0086	Unequal Variances
Distribution	Anderson-Darling A2 Normality Test	0.2286	3.878	0.8419	Normal Distribution
Distribution	D'Agostino Skewness Test	0.184	2.576	0.8540	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1261	0.2471	0.7937	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9826	0.8408	0.9806	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.438E+6	1.407E+6	1.470E+6	1.434E+6	1.389E+6	1.516E+6	1.351E+4	2.66%	0.00%
100		8	1.344E+6	1.247E+6	1.442E+6	1.348E+6	1.186E+6	1.510E+6	4.130E+4	8.69%	6.55%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.456E+6	1.412E+6	1.389E+6	1.417E+6	1.516E+6	1.449E+6	1.426E+6	1.443E+6
100		1.224E+6	1.186E+6	1.411E+6	1.510E+6	1.375E+6	1.468E+6	1.321E+6	1.259E+6

CETIS Measurement Report

Report Date: 08 Feb-17 16:46 (p 1 of 2)
 Test Code: TAM0117.198sel | 17-2418-6894

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 18-7358-1921	Test Type: Cell Growth	Analyst:
Start Date: 24 Jan-17 16:16	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 28 Jan-17 14:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-7292-3588	Code: TAM0117.198s	Client: Test America Irvine
Sample Date: 22 Jan-17 22:21	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report	
Sample Age: 42h (2.1 °C)	Station: Outfall006_20170123_Comp (440-174321-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	63			63	63	0	0	0.0%	0
Overall		2	66	27.88	104.1	63	69	3	4.243	6.43%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	443.8	437.4	450.2	439	452	2.311	5.167	1.16%	0
100		5	245	241.4	248.6	242	249	1.304	2.915	1.19%	0
Overall		10	344.4	269.4	419.4	242	452	33.16	104.9	30.44%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	72			72	72	0	0	0.0%	0
Overall		2	84.5	-74.33	243.3	72	97	12.5	17.68	20.92%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.54	7.352	7.728	7.3	7.7	0.06782	0.1517	2.01%	0
Overall		10	7.53	7.434	7.626	7.3	7.7	0.0423	0.1337	1.78%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.14	23.88	24.4	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.15	24.01	24.29	24	24.5	0.06191	0.1958	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 08 Feb-17 16:46 (p 2 of 2)
 Test Code: TAM0117.198sel | 17-2418-6894

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		63

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	452	439	440	445	443
100		243	242	247	249	244

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		72

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.6	7.7
100		7.6	7.3	7.5	7.6	7.7

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.5	24.2	24.1	24	24
100		24.5	24.1	24.1	24	24



CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)

Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



2 of 2

Test America

CHAIN OF CUSTODY FORM

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Dierian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 006 Comp		ANALYSIS REQUIRED Priority Pollutants-SVOCs (625) Asbestos (100.2) Chlorpyrifos, Diazinon (525.2) Cr (VI), Total (218.6)		Comments	
Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Container Type 1 L Glass Amber 1L Poly 1 L Glass Amber 500 mL Poly 1 L Glass Amber 1 L Glass Amber		# of Cont. 2 1 2 1 2 2		Preservative None None HCl None None HCl	
Sample I.D. Outfall006_20170123_Comp Outfall006_20170123_Comp-Extra		Sampling Date/Time 1/23/2017 2221 1/23/2017		Bottle # 175 270 275 280 275 275		MS/MSD No No No No No No	
Sample Description Outfall 006		Sample Matrix WM WM WM WM WM WM		Container Type 1 L Glass Amber 1L Poly 1 L Glass Amber 500 mL Poly 1 L Glass Amber 1 L Glass Amber		# of Cont. 2 1 2 1 2 2	
Sample Matrix WM WM WM WM WM WM		Sampling Date/Time 1/23/2017 2221 1/23/2017		Bottle # 175 270 275 280 275 275		MS/MSD No No No No No No	
Sample Matrix WM WM WM WM WM WM		Sampling Date/Time 1/23/2017 2221 1/23/2017		Bottle # 175 270 275 280 275 275		MS/MSD No No No No No No	

Legend: R = Routine, A = Annual

Relinquished By: [Signature] Date/Time: 1/23/17 1400 Company: JHA

Relinquished By: [Signature] Date/Time: 1/23/17 1550 Company: [Blank]

Relinquished By: [Signature] Date/Time: 1/23/17 1500 Company: [Blank]

Turn-around time: (Check)
 24 Hour: _____ 72 Hour: _____ 10 Day:
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
 Intact: _____ On Ice: _____

Data Requirements: (Check)
 No Level IV: _____ All Level IV:



1-23-17
 1-23-17
 1-23-17

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174321-1

Login Number: 174321

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174321-1

Login Number: 174321

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/26/17 09:53 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174321-1	Outfall006_20170123_Comp	70	63	75	66	67	74	70	63
440-174321-1 - RA	Outfall006_20170123_Comp		61						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174321-1	Outfall006_20170123_Comp	59	64	65	81	68	77	96	63
440-174321-1 - RA	Outfall006_20170123_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174321-1	Outfall006_20170123_Comp		59		64		65	81	
440-174321-1 - RA	Outfall006_20170123_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174321-1	Outfall006_20170123_Comp		68		77		96
440-174321-1 - RA	Outfall006_20170123_Comp						
MB 320-147877/1-A	Method Blank		69		78		96

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174321-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 4, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174321-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: V

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170123_ Comp	440-174321-1	N/A	WM	1/23/17 12:00 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174321-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 4, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The detector efficiency was not evaluated at Level V. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. Calibration was not reviewed at Level V.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of gross alpha, gross beta and total uranium. Gross alpha and total uranium were not different from the method blank at the 1% level of confidence and were therefore qualified as a nondetect (U) in the site sample. Gross beta was not different from the method blank at the 5% level of confidence and was therefore qualified as estimated (J) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level V review was performed for the sample in this data package. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.



III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401743212

Analysis Method E900

Sample Name Outfall006_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.77	1.38	1.84	1.84	pCi/L		U	B
Gross Beta Analytes	GROSSBETA	3.51	0.949	1.10	1.10	pCi/L		J	B, DNQ

Analysis Method E901.1

Sample Name Outfall006_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-5.88	11.5	19.5	19.5	pCi/L	U	U	
Potassium-40	13966-00-2	67.1	105	170	170	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall006_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0209	0.378	0.770	0.770	pCi/L	U	U	

Analysis Method E904.0

Sample Name Outfall006_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.0970	0.624	1.14	1.14	pCi/L	UG	U	

Analysis Method E905.0

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.280	0.333	0.547	0.547	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	29.7	160	279	279	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall006_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-174321-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.737	0.583	0.578	0.578	pCi/L		U	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174321-2

Client Project/Site: Annual Outfall 006 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/23/2017 11:09:18 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/23/2017 11:09:18 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174321-1	Outfall006_20170123_Comp	Water	01/23/17 12:00	01/23/17 15:50

- 1
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Job ID: 440-174321-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174321-2

Comments

No additional comments.

Receipt

The samples were received on 1/23/2017 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 1.9° C and 2.1° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-292256:

The gross alpha matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the lower control limit of 60% (56% and 59%). Sample matrix interference is suspected because the associated gross alpha laboratory control sample (LCS) recovery is within acceptance limits. The data have been qualified and reported.

Outfall006_20170123_Comp (440-174321-1), (LCS 160-292256/2-A), (LCSB 160-292256/3-A), (MB 160-292256/1-A), (440-174317-Q-1-K), (440-174317-Q-1-L MS), (440-174317-Q-1-N MSB), (440-174317-Q-1-O MSB) and (440-174317-Q-1-M MSD)

Method(s) 904.0: Radium-228 Batch 290115:

The radium-228 detection goal was not met for the following samples due to a reduced aliquot, which can be attributed to the presence of matrix interferences (reference NCM 103187 and 103186): Outfall006_20170123_Comp (440-174321-1). Analytical results are reported with the detection limit achieved.

Method(s) PrecSep_0: Radium-228 Prep Batch 160-290115:

The following samples were prepared at a reduced aliquot due to cloudiness. Outfall006_20170123_Comp (440-174321-1).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-290058:

The following samples were prepared at a reduced aliquot due to cloudiness. Outfall006_20170123_Comp (440-174321-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.77		1.34	1.38	3.00	1.84	pCi/L	02/14/17 10:22	02/20/17 21:40	1
Gross Beta	3.51		0.882	0.949	4.00	1.10	pCi/L	02/14/17 10:22	02/20/17 21:40	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-5.88	U	11.5	11.5	20.0	19.5	pCi/L	01/26/17 14:59	01/26/17 19:51	1
Potassium-40	67.1	U	105	105		170	pCi/L	01/26/17 14:59	01/26/17 19:51	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0209	U	0.378	0.378	1.00	0.770	pCi/L	01/30/17 10:23	02/21/17 22:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	65.8		40 - 110					01/30/17 10:23	02/21/17 22:50	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0970	U G	0.624	0.624	1.00	1.14	pCi/L	01/30/17 13:37	02/20/17 11:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	65.8		40 - 110					01/30/17 13:37	02/20/17 11:20	1
Y Carrier	84.9		40 - 110					01/30/17 13:37	02/20/17 11:20	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.280	U	0.332	0.333	3.00	0.547	pCi/L	01/31/17 11:55	02/13/17 17:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.1		40 - 110					01/31/17 11:55	02/13/17 17:09	1
Y Carrier	95.0		40 - 110					01/31/17 11:55	02/13/17 17:09	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	29.7	U	160	160	500	279	pCi/L	02/21/17 12:33	02/22/17 00:26	1

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.737		0.582	0.583	1.00	0.578	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	97.6		30 - 110					02/01/17 09:37	02/14/17 15:44	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Client Sample ID: Outfall006_20170123_Comp

Lab Sample ID: 440-174321-1

Date Collected: 01/23/17 12:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292256	02/14/17 10:22	MRB	TAL SL
Total/NA	Analysis	900.0		1			293437	02/20/17 21:40	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289211	01/26/17 19:51	CDR	TAL SL
Total/NA	Prep	PrecSep-21			499.48 mL	1.0 g	290058	01/30/17 10:23	AS	TAL SL
Total/NA	Analysis	903.0		1			293678	02/21/17 22:50	RTM	TAL SL
Total/NA	Prep	PrecSep_0			499.48 mL	1.0 g	290115	01/30/17 13:37	AS	TAL SL
Total/NA	Analysis	904.0		1			293387	02/20/17 11:20	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.54 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292017	02/13/17 17:09	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.0 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/22/17 00:26	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.65 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292523	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292256/1-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292256

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.9375		0.646	0.654	3.00	0.930	pCi/L	02/14/17 10:22	02/20/17 06:20	1
Gross Beta	0.7595	U	0.541	0.546	4.00	0.814	pCi/L	02/14/17 10:22	02/20/17 06:20	1

Lab Sample ID: LCS 160-292256/2-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.84		6.18	3.00	1.76	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-292256/3-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.1	88.28		9.35	4.00	0.832	pCi/L	97	75 - 125

Lab Sample ID: 440-174317-Q-1-L MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	1.10	U	49.9	28.11	F1	4.52	3.00	1.67	pCi/L	56	60 - 140

Lab Sample ID: 440-174317-Q-1-M MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
						Uncert. (2σ+/-)							
Gross Alpha	1.10	U	49.9	29.64	F1	4.89	3.00	1.70	pCi/L	59	60 - 140	0.16	1

Lab Sample ID: 440-174317-Q-1-N MSBT
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	3.67		91.1	89.43		9.48	4.00	1.08	pCi/L	94	60 - 140

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174317-Q-1-O MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	3.67		91.1	87.05		9.23	4.00	1.10	pCi/L	92	60 - 140	0.13	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Count Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-AK-1-B DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L		0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L		0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290058/1-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Count Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05389	U	0.113	0.113	1.00	0.282	pCi/L	01/30/17 10:23	02/21/17 20:55	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					01/30/17 10:23	02/21/17 20:55	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290058/2-A

Matrix: Water

Analysis Batch: 293668

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 290058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	6.01	7.329		1.04	1.00	0.310	pCi/L	122	68 - 137
Carrier		LCS %Yield	LCS Qualifier	Limits					
Ba Carrier		84.1		40 - 110					

Lab Sample ID: 440-174317-F-1-C MS

Matrix: Water

Analysis Batch: 293679

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.177	U	6.01	7.673		1.11	1.00	0.362	pCi/L	128	75 - 138
Carrier		MS %Yield	MS Qualifier	Limits							
Ba Carrier		86.4		40 - 110							

Lab Sample ID: 440-174317-F-1-D MSD

Matrix: Water

Analysis Batch: 293679

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.177	U	6.01	7.775		1.24	1.00	0.541	pCi/L	129	75 - 138	0.04	1
Carrier		MSD %Yield	MSD Qualifier	Limits									
Ba Carrier		61.1		40 - 110									

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290115/1-A

Matrix: Water

Analysis Batch: 293387

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 290115

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1504	U	0.263	0.264	1.00	0.447	pCi/L	01/30/17 13:37	02/20/17 11:17	1
Carrier		MB %Yield	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Ba Carrier		83.8		40 - 110				01/30/17 13:37	02/20/17 11:17	1
Y Carrier		82.6		40 - 110				01/30/17 13:37	02/20/17 11:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-290115/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-228	13.8	16.70		1.82	1.00	0.428	pCi/L	121	56 - 140	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	84.1		40 - 110							
Y Carrier	81.5		40 - 110							

Lab Sample ID: 440-174317-F-1-E MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.179	U	13.8	15.35		1.68	1.00	0.426	pCi/L	111	45 - 150
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	86.4		40 - 110								
Y Carrier	84.1		40 - 110								

Lab Sample ID: 440-174317-F-1-F MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
Radium-228	0.179	U	13.8	17.08		1.95	1.00	0.616	pCi/L	123	45 - 150	0.48	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	61.1		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1
Carrier	%Yield	MB Qualifier	Limits							
Sr Carrier	84.3		40 - 110							
Y Carrier	98.7		40 - 110							
								Prepared	Analyzed	Dil Fac
								01/31/17 11:55	02/13/17 15:14	1
								01/31/17 11:55	02/13/17 15:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A

Matrix: Water

Analysis Batch: 292016

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
Carrier		LCS %Yield	LCS Qualifier	Limits					
Sr Carrier		87.2		40 - 110					
Y Carrier		92.7		40 - 110					

Lab Sample ID: 440-174110-G-1-E MS

Matrix: Water

Analysis Batch: 292016

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
Carrier		MS %Yield	MS Qualifier	Limits							
Sr Carrier		84.4		40 - 110							
Y Carrier		98.3		40 - 110							

Lab Sample ID: 440-174110-G-1-F MSD

Matrix: Water

Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
Carrier		MSD %Yield	MSD Qualifier	Limits									
Sr Carrier		84.9		40 - 110									
Y Carrier		97.9		40 - 110									

Lab Sample ID: 440-174317-F-1-H MSD

Matrix: Water

Analysis Batch: 292017

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
Strontium-90	-0.00912	U	8.51	7.960		0.818	3.00	0.261	pCi/L	94	19 - 150	0.19	1
Carrier		MSD %Yield	MSD Qualifier	Limits									
Sr Carrier		86.7		40 - 110									
Y Carrier		97.2		40 - 110									

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-O-1-B MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Sample		Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-O-1-C MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Sample		Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual	Uncert. (2σ+/-)							
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1

Tracer	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier				
Uranium-232	82.2		30 - 110	02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	45.3		30 - 110

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											RER	Limit
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65 - 146	
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68 - 143	

Tracer	MS %Yield	MS Qualifier	Limits
Uranium-232	78.6		30 - 110

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											RER	Limit		
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146	0.04	1	
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143	0.29	1	

Tracer	MSD %Yield	MSD Qualifier	Limits
Uranium-232	84.1		30 - 110

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
											RER	Limit
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146	
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143	

Tracer	MS %Yield	MS Qualifier	Limits
Uranium-232	78.6		30 - 110

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
											RER	Limit		
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146	0.22	1	
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143	0.35	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174317-Q-1-J MSD

Matrix: Water

Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 290556

<i>Tracer</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
Uranium-232	86.7		30 - 110

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-AK-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	PrecSep-21	
MB 160-290058/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290058/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174317-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-174317-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 290115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	PrecSep_0	
MB 160-290115/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290115/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174317-F-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-174317-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	
440-174317-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	Evaporation	
MB 160-292256/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292256/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292256/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174317-Q-1-L MS	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-174317-Q-1-N MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-O MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174321-1	Outfall006_20170123_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

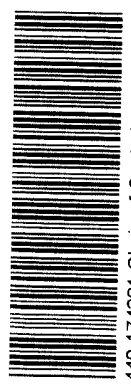
1 of 2
A-013

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine, CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [003-007, 009, 010] Outfall 006 Comp		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Recoverable Metals: Cu, Pb, Hg, P, Ag, Tl, Zn, V, Al, Hardness as CaCO3 Total Dissolved Metals: Cu, Pb, Hg, B, Fe, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, V, Al, Hardness as CaCO3 Gross Alpha(90d), Gross Beta(90d), Tritium (H-3) (90d), Sr-90 (90d), Total Radium 226 (90d), Uranium (90d), K-40, CS-137 (90d or 90d 1)		Chronic Toxicity - Selenium Priority Pollutants-Pesticides+PCBs Total Recoverable Metals: Mercury (245.1) Total Dissolved Metals: Mercury (245.1)		Comments							
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Butter #	MS/MSD	TSS	TDS	CF, F, SO4, NO3+NO2-N, Perchlorate	TCDD (and all congeners)	Chronic Toxicity - Selenium	Priority Pollutants-Pesticides+PCBs	Total Recoverable Metals: Mercury (245.1)	Total Dissolved Metals: Mercury (245.1)	Comments
Outfall 006	Outfall006_20170123_Comp	2/22/2017	WM	500 mL Poly	1	HNO3	85	No			X	X					48 hours Holding Time NO3 & NO2
		2/22/2017	WM	1 L Glass Amber	2	None	110	No									
		2/22/2017	WM	500 mL Poly	2	None	135	No									
		2/22/2017	WM	500 mL Poly	1	None	155	No									
		2/22/2017	WM	1 L Poly	1	None	185	No									
		2/22/2017	WM	1 L Poly	1	NaOH	202	No									
		2/22/2017	WM	2.5 Gal Cube	1	None	225	No									
		2/22/2017	WM	1 L Glass Amber	1	None	230	No									
		2/22/2017	WM	1 Gal Cube	6	None	235	No									
		2/22/2017	WM	1 L Glass Amber	2	None	250	No									
		2/22/2017	WM	1 L Glass Amber	1	HNO3	315	No									
		2/22/2017	WM	1 L Poly	1	None	195	No									
		2/22/2017	WM	1 L Glass Amber	1	None	320	No									
		2/22/2017	WM	1 L Glass Amber	2	None	110	No									
		2/22/2017	WM	500 mL Poly	2	None	135	No									
		2/22/2017	WM	1 L Glass Amber	2	None	255	No									

1.8/2.1
1.0/1.0
1.4/1.7
10-77



440-174321 Chain of Custody

Relinquished By: [Signature] Date/Time: 1/23/17 1400 Company: JHA

Relinquished By: [Signature] Date/Time: 1-23-17 1550 Company: [Signature]

Relinquished By: [Signature] Date/Time: 1/23/17 1550 Company: [Signature]

Turn-around time: (Check) 24 Hour: 10 Day: X
48 Hour: 5 Day: Normal:
Sample Integrity: (Check) Intact: On Ice: X
Data Requirements: (Check) No Level IV: All Level IV: X



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174321-2

Login Number: 174321

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174321-2

Login Number: 174321

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/25/17 02:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)							
440-174317-F-1-C MS	Matrix Spike	86.4							
440-174317-F-1-D MSD	Matrix Spike Duplicate	61.1							
440-174321-1	Outfall006_20170123_Comp	65.8							
LCS 160-290058/2-A	Lab Control Sample	84.1							
MB 160-290058/1-A	Method Blank	83.8							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
440-174317-F-1-E MS	Matrix Spike	86.4	84.1						
440-174317-F-1-F MSD	Matrix Spike Duplicate	61.1	83.0						
440-174321-1	Outfall006_20170123_Comp	65.8	84.9						
LCS 160-290115/2-A	Lab Control Sample	84.1	81.5						
MB 160-290115/1-A	Method Blank	83.8	82.6						

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)						
440-174110-G-1-E MS	Matrix Spike	84.4	98.3						
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9						
440-174317-F-1-H MSD	Matrix Spike Duplicate	86.7	97.2						
440-174321-1	Outfall006_20170123_Comp	82.1	95.0						
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7						
MB 160-290301/1-A	Method Blank	84.3	98.7						

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)							
440-174110-F-1-E MS	Matrix Spike	78.6							
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1							

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 006 Comp

TestAmerica Job ID: 440-174321-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
440-174321-1	Outfall006_20170123_Comp	97.6
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177320-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177320-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170217_ Grab	440-177320-1	N/A	Water	2/17/17 2:35 PM	E1664, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177320-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Analysis for Human Bacteroidetes was subcontracted to Source Molecular. No COC or sample receipt information for this shipment was provided in the data package.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS METHODS — GENERAL MINERALS

Marcia Hilchey of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A, Standard Method for the Examination of Water and Wastewater 9221F, SAM348-357 (Human Bacteroides by Quantitative PCR)* and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

III.1. HOLDING TIMES

The subcontract laboratory received the sample for Human Bacteroides analysis after the holding time requirement (24-48 hours); therefore, the result for this analysis was qualified as estimated (UJ). The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after sample weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773201

Analysis Method *DHC qPCR*

Sample Name Outfall006_20170217_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 2:35:00 PM **Validation Level:** 8

Lab Sample Name: SM-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	absent			CEs/100	U	UJ	H

Analysis Method *E1664*

Sample Name Outfall006_20170217_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 2:35:00 PM **Validation Level:** 8

Lab Sample Name: 440-177320-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.3	1.5	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177320-1

Client Project/Site: Routine Outfall 006 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/27/2017 9:13:03 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through
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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/27/2017 9:13:03 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177320-1	Outfall006_20170217_Grab	Water	02/17/17 14:35	02/17/17 19:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Job ID: 440-177320-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177320-1

Comments

No additional comments.

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390456 and analytical batch 440-390532. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Client Sample ID: Outfall006_20170217_Grab

Lab Sample ID: 440-177320-1

Date Collected: 02/17/17 14:35

Matrix: Water

Date Received: 02/17/17 19:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		02/24/17 15:25	02/25/17 05:04	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Client Sample ID: Outfall006_20170217_Grab

Lab Sample ID: 440-177320-1

Date Collected: 02/17/17 14:35

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			950 mL	1000 mL	390456	02/24/17 15:25	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390532	02/25/17 05:04	BAW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390456/1-A
 Matrix: Water
 Analysis Batch: 390532

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 390456

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/24/17 15:25	02/25/17 05:04	1

Lab Sample ID: LCS 440-390456/2-A
 Matrix: Water
 Analysis Batch: 390532

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 390456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	35.4		mg/L		89	78 - 114

Lab Sample ID: LCSD 440-390456/3-A
 Matrix: Water
 Analysis Batch: 390532

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 390456

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.3		mg/L		91	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

General Chemistry

Prep Batch: 390456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177320-1	Outfall006_20170217_Grab	Total/NA	Water	1664A	
MB 440-390456/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390456/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390456/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177320-1	Outfall006_20170217_Grab	Total/NA	Water	1664A	390456
MB 440-390456/1-A	Method Blank	Total/NA	Water	1664A	390456
LCS 440-390456/2-A	Lab Control Sample	Total/NA	Water	1664A	390456
LCSD 440-390456/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390456

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Grab

TestAmerica Job ID: 440-177320-1

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177320-1

Login Number: 177320

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177398-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MEC^x Project No.:** 1272.003H.01**Sample Delivery Group:** 440-177398-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170218_Comp	440-177398-1	N/A	Water	2/18/17 11:15 AM	E1613B, E200.8, E245.1, E300, EPA-821-R-02-018, SM2540C, SM4500-CN-E
Outfall006_20170218_Comp_F	440-177398-2	N/A	Water	2/18/17 11:15 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177398-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine, TA-Denver, and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except TCDD and TCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result above the reporting limit. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall006_20170218_Comp. The result for total



HpCDD was qualified as nondetected (U) at the level of contamination. The reviewer verified that peaks comprising the results for remaining totals in the sample included more peaks than the method blank totals. The sample results for totals HxCDD, HxCDF, HpCDF, and PeCDF were therefore qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except those results flagged by the laboratory as EMPC values. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. As 2,3,7,8-TCDF was not detected in the initial analysis of the sample, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Total PeCDD was also qualified as an estimated nondetect (UJ) as the total consisted only of the isomer also qualified as a nondetect. Totals HpCDF, HxCDD, HxCDF, and PeCDF containing EMPC peaks were qualified as estimated (J).



IV. EPA METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 3, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall006_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blanks associated with all ICPMS analyses; this review is based on summary data for those blanks with incomplete raw data.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis; this review is based on summary data only for the ICSA analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

MS/MSD analyses were performed on sample Outfall006_20170216_Comp_F for Method 200.8. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and ≤20%, respectively.

IV.4. **SERIAL DILUTION**

No serial dilution analyses were performed on a sample in this SDG.

IV.5. **INTERNAL STANDARDS PERFORMANCE**

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. **COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS**

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. **FIELD QC SAMPLES**

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. **FIELD BLANKS AND EQUIPMENT BLANKS**

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. **FIELD DUPLICATES**

There were no field duplicate samples identified for this SDG.

V. **VARIOUS METHODS — GENERAL CHEMISTRY**

Michael Cherny of MEC^X reviewed the SDG on April 13, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 300.0 and 821-R-02-013*, *Standard Methods for the Examination of Water and Wastewater 2540C and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. **HOLDING TIMES**

Chronic toxicity was analyzed 41 hours past the 36-hour holding time requirement. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)



- 14 days for total cyanide
- 28 days for chloride and sulfate

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detections of sufficient concentration to qualify sample results.

V.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

V.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773981

Analysis Method E1613B

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000044	0.00010	0.00000079	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00041	0.00010	0.0000016	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000028	0.000050	0.00000085	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000044	0.000050	0.0000017	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000013	0.000050	0.0000011	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000090	0.000050	0.00000047	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000091	0.000050	0.00000045	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000015	0.000050	0.00000047	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000020	0.000050	0.00000050	ug/L	J,DXq	UJ	*III
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000050	0.00000046	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000017	0.000050	0.00000040	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000062	0.000050	0.00000040	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000088	0.000050	0.00000062	ug/L	J,DXq	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000015	0.000050	0.00000041	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000050	0.00000039	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000029	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000031	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000051	0.000050	0.00000097	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00010	0.000050	0.0000017	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000020	0.000050	0.00000045	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000011	0.000050	0.00000045	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000038	0.000050	0.00000039	ug/L	J,DXMBq	J	B, DNQ, *III

Friday, April 14, 2017

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Analysis Method E1613B

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000088	0.000050	0.00000062	ug/L	J,DXq	UJ	*III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000010	0.00000029	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000031	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.89	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	7.5	2.0	0.50	ug/L			
Lead	T	7439-92-1	3.1	1.0	0.50	ug/L			
Selenium	T	7782-49-2	0.53	2.0	0.50	ug/L	J,DX	J	DNQ
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall006_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.1	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall006_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 11:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177398-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 11:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.4	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	0.90	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	3.6	0.50	0.25	mg/L			

Analysis Method EPA-821-R-02-013**Sample Name** Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 11:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	-10.02			% SURV		J	H

Analysis Method SM2540C**Sample Name** Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 11:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	150	10	5.0	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 11:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177398-1

Client Project/Site: Routine Outfall 006 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 3:52:34 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 3:52:34 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177398-1	Outfall006_20170218_Comp	Water	02/18/17 11:15	02/18/17 18:40
440-177398-2	Outfall006_20170218_Comp_F	Water	02/18/17 11:15	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Job ID: 440-177398-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177398-1

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 3.3° C and 4.4° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall006_20170218_Comp_F (440-177398-2). received #2 not listed on coc.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389207 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.4		0.50	0.25	mg/L			02/20/17 08:01	1
Sulfate	3.6		0.50	0.25	mg/L			02/20/17 08:01	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.90		0.15	0.070	mg/L			03/01/17 12:43	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		02/27/17 08:20	03/01/17 03:32	1
2,3,7,8-TCDF	ND		0.000010	0.0000002	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,7,8-PeCDD	0.00000088	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,7,8-PeCDF	0.00000062	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000003	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,4,7,8-HxCDD	0.00000091	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,6,7,8-HxCDD	0.00000020	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,7,8,9-HxCDD	0.00000017	J,DX	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,4,7,8-HxCDF	0.00000090	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,6,7,8-HxCDF	0.00000015	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
2,3,4,6,7,8-HxCDF	0.00000015	J,DX MB	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,4,6,7,8-HpCDD	0.000044	J,DX MB	0.000050	0.0000017	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,4,6,7,8-HpCDF	0.000028	J,DX MB	0.000050	0.0000008	ug/L		02/27/17 08:20	03/01/17 03:32	1
1,2,3,4,7,8,9-HpCDF	0.00000013	J,DX q	0.000050	0.0000011	ug/L		02/27/17 08:20	03/01/17 03:32	1
OCDD	0.00041	MB	0.00010	0.0000016	ug/L		02/27/17 08:20	03/01/17 03:32	1
OCDF	0.000044	J,DX MB	0.00010	0.0000007	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total TCDD	ND		0.000010	0.0000003	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total TCDF	ND		0.000010	0.0000002	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total PeCDD	0.00000088	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total PeCDF	0.00000038	J,DX MB q	0.000050	0.0000003	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total HxCDD	0.00000011	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total HxCDF	0.00000020	J,DX MB q	0.000050	0.0000004	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total HpCDD	0.000010	J,DX MB	0.000050	0.0000017	ug/L		02/27/17 08:20	03/01/17 03:32	1
Total HpCDF	0.00000051	J,DX MB q	0.000050	0.0000009	ug/L		02/27/17 08:20	03/01/17 03:32	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	74		25 - 164	02/27/17 08:20	03/01/17 03:32	1
13C-2,3,7,8-TCDF	74		24 - 169	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,7,8-PeCDF	68		24 - 185	02/27/17 08:20	03/01/17 03:32	1
13C-2,3,4,7,8-PeCDF	74		21 - 178	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,4,7,8-HxCDD	92		32 - 141	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,6,7,8-HxCDD	80		28 - 130	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,4,7,8-HxCDF	87		26 - 152	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,6,7,8-HxCDF	77		26 - 123	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,7,8,9-HxCDF	69		29 - 147	02/27/17 08:20	03/01/17 03:32	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,4,6,7,8-HpCDD	64		23 - 140	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,4,6,7,8-HpCDF	72		28 - 143	02/27/17 08:20	03/01/17 03:32	1
13C-1,2,3,4,7,8,9-HpCDF	75		26 - 138	02/27/17 08:20	03/01/17 03:32	1
13C-OCDD	57		17 - 157	02/27/17 08:20	03/01/17 03:32	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197	02/27/17 08:20	03/01/17 03:32	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:13	1
Cadmium	ND		1.0	0.25	ug/L		02/24/17 10:57	02/25/17 14:13	1
Copper	7.5		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:13	1
Lead	3.1		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:13	1
Antimony	0.89	J,DX	2.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:13	1
Selenium	0.53	J,DX	2.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:13	1
Thallium	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:13	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/06/17 11:44	03/07/17 01:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	150		10	5.0	mg/L			02/23/17 08:39	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 18:00	1

Client Sample ID: Outfall006_20170218_Comp_F

Lab Sample ID: 440-177398-2

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:15	1
Cadmium	ND	QP	1.0	0.25	ug/L		02/23/17 10:47	02/25/17 15:15	1
Copper	2.1	QP	2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:15	1
Lead	ND	QP	1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:15	1
Antimony	ND	QP	2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:15	1
Selenium	ND	QP	2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:15	1
Thallium	ND	QP	1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:15	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Client Sample ID: Outfall006_20170218_Comp_F

Lab Sample ID: 440-177398-2

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/27/17 19:52	02/28/17 20:39	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389207	02/20/17 08:01	NN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391352	03/01/17 12:43	TLN	TAL IRV
Total/NA	Prep	1613B			994.4 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B		1			152750	03/01/17 03:32	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	390380	02/24/17 10:57	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			390606	02/25/17 14:13	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	392220	03/06/17 11:44	DB	TAL IRV
Total/NA	Analysis	245.1		1			392357	03/07/17 01:41	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 18:00	SN	TAL IRV

Client Sample ID: Outfall006_20170218_Comp_F

Lab Sample ID: 440-177398-2

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389638	02/21/17 15:57	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390090	02/23/17 10:47	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390630	02/25/17 15:15	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389638	02/21/17 15:57	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390887	02/27/17 19:52	DB	TAL IRV
Dissolved	Analysis	245.1		1			391253	02/28/17 20:39	DB	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389207/3
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/20/17 07:21	1
Sulfate	ND		0.50	0.25	mg/L			02/20/17 07:21	1

Lab Sample ID: LCS 440-389207/2
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.45		mg/L		109	90 - 110
Sulfate	5.00	5.13		mg/L		103	90 - 110

Lab Sample ID: 440-177394-A-1 MS
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	8.2		5.00	13.5		mg/L		106	80 - 120

Lab Sample ID: 440-177394-A-1 MSD
Matrix: Water
Analysis Batch: 389207

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	8.2		5.00	13.7		mg/L		111	80 - 120	2	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,7,8-TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	0.0000140	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDF	0.0000112	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,6,7,8-HxCDF	0.00000796	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDD	0.00000372	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDF	0.00000131	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDD	0.0000108	J,DX	0.00010	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDF	0.00000612	J,DX	0.00010	0.0000015	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDD	0.00000537	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDD	0.00000118	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDF	0.00000331	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDD	0.00000696	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDF	0.00000131	J,DX q	0.000050	0.0000012	ug/L		02/27/17 08:20	02/28/17 23:14	1
MB MB									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	52		25 - 164				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,7,8-TCDF	53		24 - 169				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDF	45		24 - 185				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,7,8-PeCDF	49		21 - 178				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				02/27/17 08:20	02/28/17 23:14	1
13C-OCDD	35		17 - 157				02/27/17 08:20	02/28/17 23:14	1
MB MB									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				02/27/17 08:20	02/28/17 23:14	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000223		ug/L		111	67 - 158
2,3,7,8-TCDF	0.000200	0.000193		ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00120		ug/L		120	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00101		ug/L		101	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100		ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922		ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000968		ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00118	MB	ug/L		118	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000993	MB	ug/L		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000998		ug/L		100	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-1,2,3,7,8-PeCDD	48		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-OCDD	55		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-152230/3-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000235		ug/L		117	67 - 158	5	50
2,3,7,8-TCDF	0.000200	0.000211		ug/L		106	75 - 158	9	50
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	0	50
1,2,3,7,8-PeCDF	0.00100	0.00114	MB	ug/L		114	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160	2	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152230/3-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000949		ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000959		ug/L		96	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000950		ug/L		95	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106	MB	ug/L		106	78 - 130	1	50
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156	0	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00116	MB	ug/L		116	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122	9	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939		ug/L		94	78 - 138	6	50
OCDD	0.00200	0.00209	MB	ug/L		104	78 - 144	4	50
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	9	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	51		20 - 175
13C-2,3,7,8-TCDF	51		22 - 152
13C-1,2,3,7,8-PeCDD	40		21 - 227
13C-1,2,3,7,8-PeCDF	44		21 - 192
13C-2,3,4,7,8-PeCDF	50		13 - 328
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,6,7,8-HxCDD	52		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-2,3,4,6,7,8-HxCDF	52		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	41		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	47		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	50		20 - 186
13C-OCDD	38		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-390380/1-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Cadmium	ND		1.0	0.25	ug/L		02/24/17 10:57	02/25/17 13:50	1
Copper	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Lead	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Antimony	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Selenium	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Thallium	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-390380/2-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	79.5		ug/L		99	85 - 115
Cadmium	80.0	78.5		ug/L		98	85 - 115
Copper	80.0	78.0		ug/L		97	85 - 115
Lead	80.0	75.7		ug/L		95	85 - 115
Antimony	80.0	80.4		ug/L		101	85 - 115
Selenium	80.0	78.3		ug/L		98	85 - 115
Thallium	80.0	79.7		ug/L		100	85 - 115

Lab Sample ID: 440-177805-A-1-E MS
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	75.4		ug/L		94	70 - 130
Cadmium	ND		80.0	72.3		ug/L		90	70 - 130
Copper	1.0	J,DX	80.0	74.6		ug/L		92	70 - 130
Lead	ND		80.0	71.1		ug/L		89	70 - 130
Antimony	1.0	J,DX	80.0	78.4		ug/L		97	70 - 130
Selenium	71		80.0	137		ug/L		82	70 - 130
Thallium	ND		80.0	75.2		ug/L		94	70 - 130

Lab Sample ID: 440-177805-A-1-F MSD
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	89.1		ug/L		111	70 - 130	17	20
Cadmium	ND		80.0	84.9		ug/L		106	70 - 130	16	20
Copper	1.0	J,DX	80.0	86.6		ug/L		107	70 - 130	15	20
Lead	ND		80.0	82.6		ug/L		103	70 - 130	15	20
Antimony	1.0	J,DX	80.0	92.7		ug/L		115	70 - 130	17	20
Selenium	71		80.0	157		ug/L		108	70 - 130	14	20
Thallium	ND		80.0	87.1		ug/L		109	70 - 130	15	20

Lab Sample ID: MB 440-389638/1-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Cadmium	ND		1.0	0.25	ug/L		02/23/17 10:47	02/25/17 15:11	1
Copper	ND		2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Lead	ND		1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Antimony	ND		2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Selenium	ND		2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Thallium	ND		1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-389638/2-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	79.5		ug/L		99	85 - 115
Cadmium	80.0	78.3		ug/L		98	85 - 115
Copper	80.0	78.1		ug/L		98	85 - 115
Lead	80.0	74.9		ug/L		94	85 - 115
Antimony	80.0	79.6		ug/L		99	85 - 115
Selenium	80.0	76.9		ug/L		96	85 - 115
Thallium	80.0	78.7		ug/L		98	85 - 115

Lab Sample ID: 440-177398-2 MS
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Outfall006_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND	QP	80.0	82.2		ug/L		103	70 - 130
Cadmium	ND	QP	80.0	81.3		ug/L		102	70 - 130
Copper	2.1	QP	80.0	84.2		ug/L		103	70 - 130
Lead	ND	QP	80.0	78.0		ug/L		98	70 - 130
Antimony	ND	QP	80.0	83.2		ug/L		104	70 - 130
Selenium	ND	QP	80.0	79.7		ug/L		100	70 - 130
Thallium	ND	QP	80.0	82.9		ug/L		104	70 - 130

Lab Sample ID: 440-177398-2 MSD
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Outfall006_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Silver	ND	QP	80.0	86.1		ug/L		108	70 - 130	5	20
Cadmium	ND	QP	80.0	85.0		ug/L		106	70 - 130	4	20
Copper	2.1	QP	80.0	86.4		ug/L		105	70 - 130	3	20
Lead	ND	QP	80.0	80.6		ug/L		101	70 - 130	3	20
Antimony	ND	QP	80.0	87.0		ug/L		109	70 - 130	4	20
Selenium	ND	QP	80.0	82.2		ug/L		103	70 - 130	3	20
Thallium	ND	QP	80.0	86.3		ug/L		108	70 - 130	4	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-392220/1-A
Matrix: Water
Analysis Batch: 392357

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392220

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/06/17 11:44	03/07/17 00:50	1

Lab Sample ID: LCS 440-392220/2-A
Matrix: Water
Analysis Batch: 392357

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.25		ug/L		103	85 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Lab Sample ID: 440-178718-O-1-B MS
Matrix: Water
Analysis Batch: 392357

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 392220
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.18		ug/L		102	70 - 130

Lab Sample ID: 440-178718-O-1-C MSD
Matrix: Water
Analysis Batch: 392357

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 392220
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.19		ug/L		102	70 - 130	0	20

Lab Sample ID: MB 440-389638/1-G
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390887

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 19:52	02/28/17 20:25	1

Lab Sample ID: LCS 440-389638/2-G
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390887
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.60		ug/L		108	85 - 115

Lab Sample ID: 440-177393-A-2-H MS
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390887
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.47		ug/L		106	70 - 130

Lab Sample ID: 440-177393-A-2-I MSD
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390887
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.52		ug/L		106	70 - 130	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Lab Sample ID: 440-177195-K-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	190		191		mg/L		0.5	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

HPLC/IC

Analysis Batch: 389207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	300.0	
MB 440-389207/3	Method Blank	Total/NA	Water	300.0	
LCS 440-389207/2	Lab Control Sample	Total/NA	Water	300.0	
440-177394-A-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-177394-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 391352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	1613B	
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	1613B	152230
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	152230
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	152230
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152230

Metals

Filtration Batch: 389638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389638/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-389638/1-G	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-389638/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177393-A-2-H MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177393-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-177398-2 MS	Outfall006_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177398-2 MSD	Outfall006_20170218_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 390090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	200.2	389638
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.2	389638
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.2	389638
440-177398-2 MS	Outfall006_20170218_Comp_F	Dissolved	Water	200.2	389638
440-177398-2 MSD	Outfall006_20170218_Comp_F	Dissolved	Water	200.2	389638

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Metals (Continued)

Prep Batch: 390380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 390606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total Recoverable	Water	200.8	390380
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.8	390380
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.8	390380
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	390380
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	390380

Analysis Batch: 390630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	200.8	390090
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.8	390090
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.8	390090
440-177398-2 MS	Outfall006_20170218_Comp_F	Dissolved	Water	200.8	390090
440-177398-2 MSD	Outfall006_20170218_Comp_F	Dissolved	Water	200.8	390090

Prep Batch: 390887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	245.1	389638
MB 440-389638/1-G	Method Blank	Dissolved	Water	245.1	389638
LCS 440-389638/2-G	Lab Control Sample	Dissolved	Water	245.1	389638
440-177393-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	389638
440-177393-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	389638

Analysis Batch: 391253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	245.1	390887
MB 440-389638/1-G	Method Blank	Dissolved	Water	245.1	390887
LCS 440-389638/2-G	Lab Control Sample	Dissolved	Water	245.1	390887
440-177393-A-2-H MS	Matrix Spike	Dissolved	Water	245.1	390887
440-177393-A-2-I MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	390887

Prep Batch: 392220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	245.1	
MB 440-392220/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-392220/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-178718-O-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-178718-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 392357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	245.1	392220
MB 440-392220/1-A	Method Blank	Total/NA	Water	245.1	392220
LCS 440-392220/2-A	Lab Control Sample	Total/NA	Water	245.1	392220

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Metals (Continued)

Analysis Batch: 392357 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178718-O-1-B MS	Matrix Spike	Total/NA	Water	245.1	392220
440-178718-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	392220

General Chemistry

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177195-K-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18
The following analytes are included in this report, but certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
NO3NO2 Calc		Water	Nitrate Nitrite as N	

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



March 10, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall006_20170218__Comp (440-177398-1)
DATE RECEIVED: 20 Feb - 17
ABC LAB NO.: TAM0217.250

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = -10.02 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 09 Mar-17 16:08 (p 1 of 1)
 Test Code: TAM0217.250sel | 07-5304-8308

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID:	02-8417-0621	Test Type:	Cell Growth	Analyst:	
Start Date:	21 Feb-17 16:41	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	25 Feb-17 16:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	04-4940-1157	Code:	TAM0217.250s	Client:	Test America Irvine
Sample Date:	18 Feb-17 11:15	Material:	Sample Water	Project:	Boeing NPDES SSFL Outfalls
Receipt Date:	20 Feb-17 13:51	Source:	Bioassay Report		
Sample Age:	77h (1.8 °C)	Station:	Outfall006_20170218_Comp (440-177398-		

Single Comparison Summary				
Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
08-5365-8171	Cell Density	TST-Welch's t Test	<1.0E-37	100% passed cell density

Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
08-5365-8171	Cell Density	Control CV	0.04859	<<	0.2	Yes	Passes Criteria
08-5365-8171	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.342E+6	1.288E+6	1.397E+6	1.234E+6	1.419E+6	2.306E+4	6.523E+4	4.86%	0.00%
100		8	1.477E+6	1.409E+6	1.545E+6	1.365E+6	1.589E+6	2.872E+4	8.123E+4	5.50%	-10.02%

Cell Density Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	N	1.234E+6	1.312E+6	1.267E+6	1.362E+6	1.366E+6	1.380E+6	1.399E+6	1.419E+6	
100		1.544E+6	1.589E+6	1.470E+6	1.386E+6	1.466E+6	1.437E+6	1.558E+6	1.365E+6	

CETIS Analytical Report

Report Date: 09 Mar-17 16:08 (p 1 of 2)
 Test Code: TAM0217.250sel | 07-5304-8308

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 08-5365-8171	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Analized: 09 Mar-17 16:07	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 02-8417-0621	Test Type: Cell Growth	Analyst:	Start Date: 21 Feb-17 16:41	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable	Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 04-4940-1157	Code: TAM0217.250s	Client: Test America Irvine	Sample Date: 18 Feb-17 11:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report		Sample Age: 77h (1.8 °C)	Station: Outfall006_20170218_Comp (440-177398-	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	14.02	0.6974	11	CDF	<1.0E-37	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04859	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.236E+10	7.236E+10	1	13.33	0.0026	Significant Effect
Error	7.597E+10	5.427E+09	14			
Total	1.483E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.3909	8.862	0.5419	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.4158	8.862	0.5295	Equal Variances
Variances	Variance Ratio F Test	1.551	8.885	0.5769	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.303	3.878	0.6032	Normal Distribution
Distribution	D'Agostino Skewness Test	0.3931	2.576	0.6943	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1086	0.2471	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9512	0.8408	0.5084	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.342E+6	1.288E+6	1.397E+6	1.364E+6	1.234E+6	1.419E+6	2.306E+4	4.86%	0.00%
100		8	1.477E+6	1.409E+6	1.545E+6	1.468E+6	1.365E+6	1.589E+6	2.872E+4	5.50%	-10.02%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.234E+6	1.312E+6	1.267E+6	1.362E+6	1.366E+6	1.380E+6	1.399E+6	1.419E+6
100		1.544E+6	1.589E+6	1.470E+6	1.386E+6	1.466E+6	1.437E+6	1.558E+6	1.365E+6

CETIS Measurement Report

Report Date: 09 Mar-17 16:08 (p 1 of 2)
 Test Code: TAM0217.250sel | 07-5304-8308

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-8417-0621	Test Type: Cell Growth	Analyst:
Start Date: 21 Feb-17 16:41	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 04-4940-1157	Code: TAM0217.250s	Client: Test America Irvine
Sample Date: 18 Feb-17 11:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report	
Sample Age: 77h (1.8 °C)	Station: Outfall006_20170218_Comp (440-177398-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	66			66	66	0	0	0.0%	0
100		1	72			72	72	0	0	0.0%	0
Overall		2	69	30.88	107.1	66	72	3	4.243	6.15%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	427	406.2	447.8	408	444	7.497	16.76	3.93%	0
100		5	218	216.2	219.8	216	220	0.6325	1.414	0.65%	0
Overall		10	322.5	243.3	401.7	216	444	35.01	110.7	34.33%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	98			98	98	0	0	0.0%	0
100		1	71			71	71	0	0	0.0%	0
Overall		2	84.5	-87.03	256	71	98	13.5	19.09	22.59%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.66	7.518	7.802	7.5	7.8	0.05099	0.114	1.49%	0
100		5	7.68	7.496	7.864	7.5	7.9	0.06633	0.1483	1.93%	0
Overall		10	7.67	7.58	7.76	7.5	7.9	0.03958	0.1252	1.63%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.24	23.93	24.55	24	24.5	0.1122	0.251	1.04%	0
100		5	24.24	23.93	24.55	24	24.5	0.1122	0.251	1.04%	0
Overall		10	24.24	24.07	24.41	24	24.5	0.07483	0.2366	0.98%	0 (0%)

CETIS Measurement Report

Report Date: 09 Mar-17 16:08 (p 2 of 2)

Test Code: TAM0217.250sel | 07-5304-8308

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.				
Alkalinity (CaCO3)-mg/L						
Conc-%	Code	1				
0	N	66				
100		72				
Conductivity-µmhos						
Conc-%	Code	1	2	3	4	5
0	N	435	438	444	408	410
100		218	216	218	218	220
Hardness (CaCO3)-mg/L						
Conc-%	Code	1				
0	N	98				
100		71				
pH-Units						
Conc-%	Code	1	2	3	4	5
0	N	7.6	7.7	7.5	7.7	7.8
100		7.9	7.7	7.7	7.5	7.6
Temperature-°C						
Conc-%	Code	1	2	3	4	5
0	N	24.2	24	24	24.5	24.5
100		24.2	24	24	24.5	24.5



TestAmerica Irvine
 17461 Derian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: _____
 Shipping/Receiving _____
 Company: Aquatic Bioassay

Address: 29 North Olive Street,
 City: Ventura
 State, Zip: CA, 93001
 Phone: _____
 Email: _____

Project Name: Boeing NPDES SSFL outfalls
 Site: _____

Due Date Requested: 3/1/2017
 TAT Requested (days): _____

PO #: _____
 WO #: _____

Project #: 44009879
 SSOV#: _____

Sampler: _____
 Lab Pkt: Patel, Urvashi
 E-Mail: urvashi.patel@testamericainc.com
 State of Origin: California
 Accreditations Required (See note): State Program - California

Carrier Tracking No(s): _____
 Page: 440-107776.1
 Page 1 of 1
 Job #: 440-177398-1

Analysis Requested

Field Filtered Sample (Yes or No) _____
 Perform MS/MSD (Yes or No) _____
 SUB (Chronic-Selenium)/ Chronic-Selenium

Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Amchlor
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDA
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2OAS
 Q - Na2SO3
 R - Na2SO4
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4.5
 Z - other (specify)

Special Instructions/Note:

Outfall006_20170218_Comp (440-177398-1)
 Sample Date: 2/18/17
 Sample Time: 11:15 Pacific
 Sample Type: (C=Comp, G=grab)
 Matrix: (W=Water, S=Soil, O=Other, A=Air)
 Matrix: Water
 Field Filtered Sample (Yes or No) X
 Perform MS/MSD (Yes or No) _____
 SUB (Chronic-Selenium)/ Chronic-Selenium
 Total Number of containers: 6

Temp. deg. C = 18

Chlorine (mg/L) = 20.1

NH3 (mg/L) = 0.4

Empty Kit Relinquished by: _____
 Date/Time: 2/20/17 0846
 Company: TAI

Relinquished by: _____
 Date/Time: 2/20/17
 Company: _____

Relinquished by: _____
 Date/Time: _____
 Company: _____

Custody Seals Intact: _____
 Custody Seal No.: _____

Primary Deliverable Rank: 2
 Special Instructions/QC Requirements: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Method of Shipment: _____

Received by: _____
 Date/Time: 2/20/17 0846
 Company: TAI

Received by: _____
 Date/Time: 2/20/17 1351
 Company: ABC

Received by: _____
 Date/Time: _____
 Company: _____

Cooler Temperature(s) °C and Other Remarks: _____

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CHRONIC SELENASTRUM GROWTH BIOASSAY

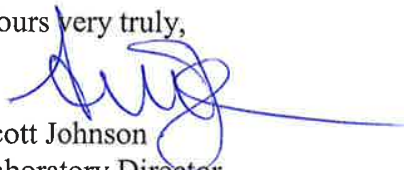
DATE: 2 February - 2017

STANDARD TOXICANT: Cadmium Chloride

NOEC = 40.00 ug/l

IC25 = 89.24 ug/l
IC50 = 135.10 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 15 Feb-17 15:17 (p 1 of 1)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-4050-2957	Cell Density	Dunnett Multiple Comparison Test	40	80	56.57		8.64%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
12-8217-0386	Cell Density	Linear Interpolation (ICPIN)	IC5	43.15	n/a	57.97		
			IC10	55.46	12.33	72.05		
			IC15	67.77	41.96	87.44		
			IC20	80.06	59.78	93.4		
			IC25	89.24	74.9	101.6		
			IC40	116.8	104.4	129.1		
			IC50	135.1	123.3	146.7		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-8217-0386	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
20-4050-2957	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
12-8217-0386	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
20-4050-2957	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
20-4050-2957	Cell Density	PMSD	0.08638	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.16%	0.00%
20		4	1.104E+6	9.960E+5	1.213E+6	1.009E+6	1.156E+6	3.408E+4	6.817E+4	6.17%	3.28%
40		4	1.100E+6	9.916E+5	1.207E+6	1.035E+6	1.188E+6	3.390E+4	6.781E+4	6.17%	3.72%
80		4	9.140E+5	8.618E+5	9.662E+5	8.720E+5	9.510E+5	1.641E+4	3.281E+4	3.59%	19.96%
140		4	5.408E+5	4.619E+5	6.196E+5	5.020E+5	6.100E+5	2.479E+4	4.958E+4	9.17%	52.65%
180		4	2.200E+5	1.785E+5	2.615E+5	1.950E+5	2.430E+5	1.303E+4	2.606E+4	11.85%	80.74%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)

Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 20-4050-2957	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 14 Feb-17 7:57	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:			
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 96h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab			
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	40	80	56.57		8.64%

Dunnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	0.9151	2.407	98650	6	CDF	0.4598	Non-Significant Effect
		40	1.037	2.407	98650	6	CDF	0.4056	Non-Significant Effect
		80*	5.564	2.407	98650	6	CDF	9.0E-05	Significant Effect
		140*	14.67	2.407	98650	6	CDF	2.7E-05	Significant Effect
		180*	22.5	2.407	98650	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.08638	0.091	0.29	Yes	Below Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.831E+12	5.663E+11	5	168.6	<1.0E-37	Significant Effect
Error	6.046E+10	3.359E+09	18			
Total	2.892E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	4.568	15.09	0.4709	Equal Variances	
Variances	Levene Equality of Variance Test	1.407	4.248	0.2686	Equal Variances	
Variances	Mod Levene Equality of Variance Test	1.086	4.248	0.4011	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.1795	3.878	0.9730	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.2901	2.576	0.7717	Normal Distribution	
Distribution	D'Agostino Skewness Test	0.4985	2.576	0.6181	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.3327	9.21	0.8468	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.08134	0.2056	1.0000	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.9787	0.884	0.8706	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.156E+6	1.037E+6	1.219E+6	4.091E+4	7.16%	0.00%
20		4	1.104E+6	9.960E+5	1.213E+6	1.126E+6	1.009E+6	1.156E+6	3.408E+4	6.17%	3.28%
40		4	1.100E+6	9.916E+5	1.207E+6	1.088E+6	1.035E+6	1.188E+6	3.390E+4	6.17%	3.72%
80		4	9.140E+5	8.618E+5	9.662E+5	9.165E+5	8.720E+5	9.510E+5	1.641E+4	3.59%	19.96%
140		4	5.408E+5	4.619E+5	6.196E+5	5.255E+5	5.020E+5	6.100E+5	2.479E+4	9.17%	52.65%
180		4	2.200E+5	1.785E+5	2.615E+5	2.210E+5	1.950E+5	2.430E+5	1.303E+4	11.85%	80.74%

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 12-8217-0386	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Official Results: Yes
Analyzed: 14 Feb-17 7:57	Analysis: Linear Interpolation (ICPIN)		
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:	
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 96h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab	
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	43.15	n/a	57.97
IC10	55.46	12.33	72.05
IC15	67.77	41.96	87.44
IC20	80.06	59.78	93.4
IC25	89.24	74.9	101.6
IC40	116.8	104.4	129.1
IC50	135.1	123.3	146.7

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.17%	0.0%
20		4	1.104E+6	1.009E+6	1.156E+6	3.408E+4	6.817E+4	6.17%	3.28%
40		4	1.100E+6	1.035E+6	1.188E+6	3.390E+4	6.781E+4	6.17%	3.72%
80		4	9.140E+5	8.720E+5	9.510E+5	1.641E+4	3.281E+4	3.59%	19.96%
140		4	5.408E+5	5.020E+5	6.100E+5	2.479E+4	4.958E+4	9.17%	52.65%
180		4	2.200E+5	1.950E+5	2.430E+5	1.303E+4	2.606E+4	11.85%	80.74%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 2 of 2)

Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-8217-0386

Endpoint: Cell Density

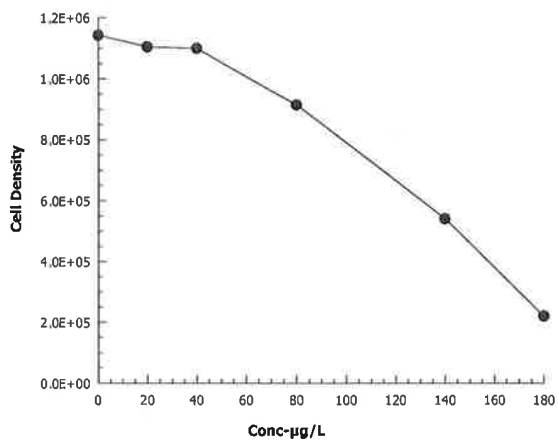
CETIS Version: CETISv1.9.2

Analyzed: 14 Feb-17 7:57

Analysis: Linear Interpolation (ICPIN)

Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
20		1	59			59	59	0	0	0.0%	0
40		1	51			51	51	0	0	0.0%	0
80		1	54			54	54	0	0	0.0%	0
140		1	58			58	58	0	0	0.0%	0
180		1	50			50	50	0	0	0.0%	0
Overall		6	56.67	49.72	63.62	50	68	2.704	6.623	11.69%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	432.8	456.4	434	460	4.238	9.476	2.13%	0
20		5	418.2	409.1	427.3	409	429	3.277	7.328	1.75%	0
40		5	413.4	409.1	417.7	410	418	1.536	3.435	0.83%	0
80		5	405.2	400.8	409.6	402	410	1.594	3.564	0.88%	0
140		5	383.8	379.2	388.4	379	388	1.655	3.701	0.96%	0
180		5	366.8	363.4	370.2	364	370	1.241	2.775	0.76%	0
Overall		30	405.3	395.7	415	364	460	4.718	25.84	6.38%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	88			88	88	0	0	0.0%	0
20		1	92			92	92	0	0	0.0%	0
40		1	93			93	93	0	0	0.0%	0
80		1	94			94	94	0	0	0.0%	0
140		1	95			95	95	0	0	0.0%	0
180		1	97			97	97	0	0	0.0%	0
Overall		6	93.17	89.95	96.38	88	97	1.249	3.061	3.29%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.82	7.616	8.024	7.6	8	0.07348	0.1643	2.1%	0
20		5	7.82	7.764	7.876	7.8	7.9	0.02	0.04473	0.57%	0
40		5	7.8	7.799	7.801	7.8	7.8	0	0	0.0%	0
80		5	7.78	7.724	7.836	7.7	7.8	0.02001	0.04473	0.58%	0
140		5	7.74	7.672	7.808	7.7	7.8	0.0245	0.05478	0.71%	0
180		5	7.74	7.672	7.808	7.7	7.8	0.0245	0.05478	0.71%	0
Overall		30	7.783	7.754	7.813	7.6	8	0.01445	0.07915	1.02%	0 (0%)

CETIS Measurement Report

Report Date: 15 Feb-17 15:17 (p 2 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
20		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
40		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
80		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
140		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
180		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		30	24.1	24.08	24.12	24	24.2	0.01174	0.06433	0.27%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	68
20		59
40		51
80		54
140		58
180		50

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	434	442	444	443	460
20		409	415	418	420	429
40		414	410	410	415	418
80		402	403	403	408	410
140		379	381	385	388	386
180		364	364	367	369	370

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	88
20		92
40		93
80		94
140		95
180		97

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	8	7.7	7.9	7.9	7.6
20		7.9	7.8	7.8	7.8	7.8
40		7.8	7.8	7.8	7.8	7.8
80		7.8	7.7	7.8	7.8	7.8
140		7.8	7.7	7.7	7.7	7.8
180		7.8	7.7	7.7	7.7	7.8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24	24.1	24.1	24.1	24.2
20		24	24.1	24.1	24.1	24.2
40		24	24.1	24.1	24.1	24.2
80		24	24.1	24.1	24.1	24.2
140		24	24.1	24.1	24.1	24.2
180		24	24.1	24.1	24.1	24.2





CHAIN OF CUSTODY FORM

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derrien Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 003-007, 009, 010 Outfall 006 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.598.0702 (cell)		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.598.0702 (cell)		Total Recoverable Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Tl X		Total Dissolved Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Tl X		Total Recoverable Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Tl X		Total Dissolved Metals: (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl X		Total Recoverable Metals: Mercury (E245.1) X		Total Dissolved Metals: Mercury (E245.1) X		Comments																		
Sample Description Outfall 006	Sample I.D. Outfall006_20170218_Comp	Sampling Date/Time 2/19/2017 / 11:55	Matrix WM	Container Type 500 mL Poly	# of Cont. 1	Preservative HNO ₃	Bottle # 95	MSMSD No	Total Recoverable Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Tl X	Total Dissolved Metals: (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl X	Total Recoverable Metals: Mercury (E245.1) X	Total Dissolved Metals: Mercury (E245.1) X	Cyanide (SM4500-CN-E / E335.2) X	Chronic Toxicity - Selenium (EPA-821-R-02-013) X	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1)	Unfiltered and unpreserved analytes, Separate RAD onto another workorder. Analyze duplicate, not MSMMSD. Only test if first or second rain events of the year	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Filter and preserve w/in 24hrs of receipt at lab	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.	Hold	Hold	48 hours Holding Time NO3 & NO2																	
																						Relinquished By <i>[Signature]</i>	Date/Time 02/19/17	Company JHA	Relinquished By <i>[Signature]</i>	Date/Time 2/19/2017 / 11:55	Matrix WM	Container Type 1 L Glass Amber	# of Cont. 1	Preservative None	Bottle # 205	MSMSD No	Total Recoverable Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Tl X	Total Dissolved Metals: (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl X	Total Recoverable Metals: Mercury (E245.1) X	Total Dissolved Metals: Mercury (E245.1) X	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X 48 Hour: _____ 5 Day: _____ Normal: _____	Sample Integrity: (Check) Intact: _____ On Ice: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: _____ X



TestAmerica Irvine
 17461 Derian Ave Suite 100
 Irvine, CA 92614-5617
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



Client Information (Sub Contract Lab)
 Client Contact: Patel, Urvashi
 Shipping/Receiving: urvashi.patel@testamericainc.com
 Company: TestAmerica Laboratories, Inc.
 Address: 13715 Rider Trail North, California
 City: Earth City
 State, Zip: MO, 63045
 Phone: 314-298-8566(Tel) 314-298-8757(Fax)
 Email:
 Project Name: Boeing NPDES SSFL outfalls
 Site:
 Project #: 44009879
 SSO#:

Sampler: Patel, Urvashi
Lab PM: Patel, Urvashi
Phone: urvashi.patel@testamericainc.com
E-Mail: urvashi.patel@testamericainc.com
State Program: California
Accreditations Required (See note):
Due Date Requested: 3/2/2017
TAT Requested (days):
PO #:
WO #:
Sample Date: 2/18/17
Sample Time: 11:15 Pacific
Sample Date: 2/18/17
Sample Time: 11:15 Pacific

Sample Identification - Client ID (Lab ID)
 Outfall006_20170218_Comp (440-177398-1)

Sample ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=tissue, A=air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	Analysis Requested	Total Number of containers	Special Instructions/Note:
Outfall006_20170218_Comp (440-177398-1)	2/18/17	11:15 Pacific		Water		X	X	900.0/Evaporation Gross Alpha/Beta	2	Boeing SSFL; DO NOT FILTER; use prep date from preservation
								901.0/Cs/Fill_Geo_0 K-40 and Cesium-137		
								903.0/Presep_21 Radium-226		
								904.0/Presep_0 Radium-228		
								905.0/Presep_7 Strontium-90		
								906.0/LSC_Dist_Susp Tritium		
								A01R_U/Exchrom_Actin Total Uranium		

Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Amchlor
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDA
 Other:
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2O4S
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4-5
 Z - other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:
 Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by _____ Date: _____ Time: _____
 Relinquished by: *VWB* Date/Time: 2/20/17 17:00 Company: TAI
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks:



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Patel, Urvashi	Carrier Tracking No(s): 440-107787-1	COC No: 440-107787-1
Client Contact: Shipping/Receiving		Phone: urvashi.patel@testamericainc.com	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-177398-1	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify) Other:
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 3/2/2017	Analysis Requested		
City: West Sacramento		TAT Requested (days):	Total Number of Containers		
State, Zip: CA, 95605		PO #:	Perform MS/MSD (Yes or No)		
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		WO #:	Field Filtered Sample (Yes or No)		
Email:		Project #:	16138/16138_Sox_Sep_P Standard List w/ Totals		
Project Name: Boeing NPDES SSFL outfalls		SSOW#:	X		
Site:		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water/soil)
Sample Identification - Client ID (Lab ID)		2/18/17	11:15 Pacific	Water	Preservation Code
Outfall006_20170218_Comp (440-177398-1)		<p>fld 4 bottles as 2-2017</p> <p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix, being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>			
Special Instructions/Note:		See OAS, Boeing_wtu to zero, ug/L, Use Boeing glassware.			
<p>Possible Hazard Identification</p> <p>Unconfirmed</p> <p>Deliverable Requested: I, II, III, IV, Other (specify)</p> <p>Primary Deliverable Rank: 2</p> <p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <p><input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements</p>					
Empty Kit Relinquished by:		Time:			
Relinquished by: V. Bamba		Date: 2/20/17	17:00	Company: TAA	Received by: W. J. L.
Relinquished by:		Date/Time:		Company:	Date/Time: 2/22/17
Relinquished by:		Date/Time:		Company:	Date/Time: 1/1/00
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: 0.4, 0.8			



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177398-1

Login Number: 177398

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177398-1

Login Number: 177398

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177398-1

Login Number: 177398

List Number: 4

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	N/A	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-177398-1	Outfall006_20170218_Comp	74	74	60	68	74	92	80	87
MB 320-152230/1-A	Method Blank	52	53	39	45	49	58	54	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-177398-1	Outfall006_20170218_Comp	77	69	78	64	72	75	57
MB 320-152230/1-A	Method Blank	53	49	57	40	48	47	35

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152230/2-A	Lab Control Sample	62	63	48	53	59	75	71	70
LCSD 320-152230/3-A	Lab Control Sample Dup	51	51	40	44	50	62	52	57

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152230/2-A	Lab Control Sample	63	59	66	54	66	63	55
LCSD 320-152230/3-A	Lab Control Sample Dup	53	46	52	41	47	50	38

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177398-2

Client Project/Site: Routine Outfall 006 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 9:52:18 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 9:52:18 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177398-1	Outfall006_20170218_Comp	Water	02/18/17 11:15	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Job ID: 440-177398-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177398-2

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 3.3° C and 4.4° C.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall006_20170218_Comp (440-177398-1)

Method(s) PrecSep_0: Radium 228; Prep Batch 294407

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294407. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-21: Radium 226; Prep Batch 294401

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294401. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

The following sample was prepped at a reduced aliquot due to sediment.

Outfall006_20170218_Comp (440-177398-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	4.90		1.62	1.71	3.00	1.69	pCi/L	03/16/17 09:14	03/19/17 20:28	1
Gross Beta	7.74		1.07	1.32	4.00	0.937	pCi/L	03/16/17 09:14	03/19/17 20:28	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.79	U	9.64	9.64	20.0	16.4	pCi/L	02/23/17 14:59	02/24/17 15:17	1
Potassium-40	14.6	U	83.3	83.3		145	pCi/L	02/23/17 14:59	02/24/17 15:17	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.287		0.122	0.124	1.00	0.115	pCi/L	02/24/17 10:49	03/20/17 20:29	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	57.8		40 - 110					02/24/17 10:49	03/20/17 20:29	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.318	U	0.365	0.367	1.00	0.601	pCi/L	02/24/17 11:31	03/11/17 14:44	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	57.8		40 - 110					02/24/17 11:31	03/11/17 14:44	1
<i>Y Carrier</i>	83.7		40 - 110					02/24/17 11:31	03/11/17 14:44	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0236	U	0.337	0.337	3.00	0.601	pCi/L	03/03/17 14:30	03/13/17 10:33	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	77.8		40 - 110					03/03/17 14:30	03/13/17 10:33	1
<i>Y Carrier</i>	98.7		40 - 110					03/03/17 14:30	03/13/17 10:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	262	U	187	189	500	293	pCi/L	03/17/17 10:22	03/17/17 19:26	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.632		0.300	0.302	1.00	0.175	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	57.2		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/16/17 09:14	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:28	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294390	02/24/17 15:17	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.52 mL	1.0 g	294401	02/24/17 10:49	PJM	TAL SL
Total/NA	Analysis	903.0		1			298257	03/20/17 20:29	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.52 mL	1.0 g	294407	02/24/17 11:31	PJM	TAL SL
Total/NA	Analysis	904.0		1			297297	03/11/17 14:44	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.42 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:33	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 19:26	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.21 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298115	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294401/1-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294401

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1011		0.0693	0.0699	1.00	0.0920	pCi/L	02/24/17 10:49	03/20/17 20:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					02/24/17 10:49	03/20/17 20:28	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294401/2-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.72		1.12	1.00	0.112	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	89.7		40 - 110							

Lab Sample ID: LCSD 160-294401/3-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	11.08		1.15	1.00	0.0841	pCi/L	98	68 - 137	0.16	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294407/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294407

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03249	U	0.238	0.238	1.00	0.431	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	86.7		40 - 110			02/24/17 11:31	03/11/17 14:43	1		
Y Carrier	83.7		40 - 110			02/24/17 11:31	03/11/17 14:43	1		

Lab Sample ID: LCS 160-294407/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	13.59		1.49	1.00	0.394	pCi/L	99	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	89.7		40 - 110						
Y Carrier	86.4		40 - 110						

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-294407/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.7	13.97		1.51	1.00	0.370	pCi/L	102	56 - 140	0.13	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								
Y Carrier	87.5		40 - 110								

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1
Carrier	%Yield	MB Qualifier	Limits							
Sr Carrier	77.8		40 - 110							
Y Carrier	97.2		40 - 110							

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150
Carrier	%Yield	MS Qualifier	Limits								
Sr Carrier	80.3		40 - 110								
Y Carrier	104		40 - 110								

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A

Matrix: Water

Analysis Batch: 298080

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 296908

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	MB MB		Limits			Prepared	Analyzed	Dil Fac		
%Yield	Qualifier									
Uranium-232	73.2		30 - 110			03/09/17 12:44	03/16/17 23:27	1		

Lab Sample ID: LCS 160-296908/2-A

Matrix: Water

Analysis Batch: 298121

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
									Limits	
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120	
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121	
Tracer	LCS LCS		Limits			Prepared	Analyzed	Dil Fac		
%Yield	Qualifier									
Uranium-232	89.4		30 - 110							

Lab Sample ID: 440-177394-A-1-L MS

Matrix: Water

Analysis Batch: 298093

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
											Limits	
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146	
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143	
Tracer	MS MS		Limits			Prepared	Analyzed	Dil Fac				
%Yield	Qualifier											
Uranium-232	63.1		30 - 110									

Lab Sample ID: 440-177394-A-1-M MSD

Matrix: Water

Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	RER Limit
											Limits			
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146	0.83	1	
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1	
Tracer	MSD MSD		Limits			Prepared	Analyzed	Dil Fac						
%Yield	Qualifier													
Uranium-232	81.8		30 - 110											

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-G MS

Matrix: Water

Analysis Batch: 298118

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	74.3		30 - 110								

Lab Sample ID: 440-178167-M-1-H MSD

Matrix: Water

Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual								
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	89.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Rad

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 294401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294401/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294401/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-294401/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 294407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294407/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294407/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-294407/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSE 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Rad (Continued)

Prep Batch: 298177 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

440-177398 Chain of Custody

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 003-007, 009, 010 Outfall 006 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.598.0702 (cell)</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sample Matrix WM</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative HNO₃</p>		<p>Bottle # 95</p>		<p>MSMSD No</p>			
<p>Test America Contact: Urvasi Patel 17461 Derrien Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Test America's services under this COC shall be performed in accordance with the TACs within Blanket Sampling Agreement 2015-16. The contract is between Halley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</p>		<p>Sampler: <i>Mark Dominick</i></p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 2</p>		<p>Preservative None</p>		<p>Bottle # 110</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 2</p>		<p>Preservative None</p>		<p>Bottle # 145</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp_Extra</p>		<p>Sample I.D. Outfall006_20170218_Comp_F</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 320</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 2</p>		<p>Preservative None</p>		<p>Bottle # 145</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 6</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 230</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 2.6 Gal Cube</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 225</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative NaOH</p>		<p>Bottle # 220</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 155</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 155</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 220</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 220</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 230</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 230</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
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<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p>		<p>Container Type 1 L Glass Amber</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>		<p>Container Type 500 mL Poly</p>		<p># of Cont. 1</p>		<p>Preservative None</p>		<p>Bottle # 235</p>		<p>MSMSD No</p>	
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<p>Sample Description Outfall006_20170218_Comp</p>		<p>Sample I.D. Outfall006_20170218_Comp</p>		<p>Sampling Date/Time 2/19/2017 / 11:15</p> </																					

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177398-2

Login Number: 177398

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177398-2

Login Number: 177398

List Number: 2

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/22/17 01:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-177398-1	Outfall006_20170218_Comp	57.8
LCS 160-294401/2-A	Lab Control Sample	89.7
LCSD 160-294401/3-A	Lab Control Sample Dup	90.9
MB 160-294401/1-A	Method Blank	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-177398-1	Outfall006_20170218_Comp	57.8	83.7
LCS 160-294407/2-A	Lab Control Sample	89.7	86.4
LCSD 160-294407/3-A	Lab Control Sample Dup	90.9	87.5
MB 160-294407/1-A	Method Blank	86.7	83.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-177394-A-1-I MS	Matrix Spike	80.3	104
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2
440-177398-1	Outfall006_20170218_Comp	77.8	98.7
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177394-A-1-L MS	Matrix Spike	63.1
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8
440-177398-1	Outfall006_20170218_Comp	57.2
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177398-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 9, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-177398-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall006_20170218_ Comp	440-177398-1	N/A	Water	2/18/17 11:15 AM	E200.8
Outfall006_20170218_ Comp_F	440-177398-2	N/A	Water	2/18/17 11:15 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177398-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHOD 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 9, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall006_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals results from this sample were qualified as estimated (UJ).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration *r* values (when appropriate) were ≥ 0.995 , *y*-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blanks associated with all ICPMS analyses; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis; this review is based on summary data only for the ICSA analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall006_20170216_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773984

Analysis Method E200.8

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	5.8	10	5.0	ug/L	J,DX	J	DNQ
Zinc	T	7440-66-6	25	20	10	ug/L			

Sample Name Outfall006_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177398-4

Client Project/Site: Routine Outfall 006 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 4:44:31 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 4:44:31 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177398-1	Outfall006_20170218_Comp	Water	02/18/17 11:15	02/18/17 18:40
440-177398-2	Outfall006_20170218_Comp_F	Water	02/18/17 11:15	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Job ID: 440-177398-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177398-4**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 3.3° C and 4.4° C.

Receipt Exceptions

No additional comments

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	5.8	J,DX	10	5.0	ug/L		02/24/17 10:57	02/25/17 14:13	1
Zinc	25		20	10	ug/L		02/24/17 10:57	02/25/17 14:13	1

Client Sample ID: Outfall006_20170218_Comp_F

Lab Sample ID: 440-177398-2

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	QP	10	5.0	ug/L		02/23/17 10:47	02/25/17 15:15	1
Zinc	ND	QP	20	10	ug/L		02/23/17 10:47	02/25/17 15:15	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Client Sample ID: Outfall006_20170218_Comp

Lab Sample ID: 440-177398-1

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	390380	02/24/17 10:57	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			390606	02/25/17 14:13	RC	TAL IRV

Client Sample ID: Outfall006_20170218_Comp_F

Lab Sample ID: 440-177398-2

Date Collected: 02/18/17 11:15

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389638	02/21/17 15:57	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390090	02/23/17 10:47	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390630	02/25/17 15:15	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-390380/1-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/24/17 10:57	02/25/17 13:50	1
Zinc	ND		20	10	ug/L		02/24/17 10:57	02/25/17 13:50	1

Lab Sample ID: LCS 440-390380/2-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	80.0	76.5		ug/L		96	85 - 115
Zinc	80.0	77.8		ug/L		97	85 - 115

Lab Sample ID: 440-177805-A-1-E MS
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		80.0	75.7		ug/L		95	70 - 130
Zinc	15	J,DX	80.0	78.4		ug/L		79	70 - 130

Lab Sample ID: 440-177805-A-1-F MSD
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		80.0	86.7		ug/L		108	70 - 130	14	20
Zinc	15	J,DX	80.0	90.9		ug/L		94	70 - 130	15	20

Lab Sample ID: MB 440-389638/1-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/23/17 10:47	02/25/17 15:11	1
Zinc	ND		20	10	ug/L		02/23/17 10:47	02/25/17 15:11	1

Lab Sample ID: LCS 440-389638/2-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	80.0	77.2		ug/L		96	85 - 115
Zinc	80.0	75.6		ug/L		94	85 - 115

Lab Sample ID: 440-177398-2 MS
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Outfall006_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	1.89		80.0	81.2		ug/L		99	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-177398-2 MS
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Outfall006_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	4.66		80.0	80.4		ug/L		95	70 - 130

Lab Sample ID: 440-177398-2 MSD
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Outfall006_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	1.89		80.0	83.3		ug/L		102	70 - 130	3	20
Zinc	4.66		80.0	83.0		ug/L		98	70 - 130	3	20



QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Metals

Filtration Batch: 389638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389638/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177398-2 MS	Outfall006_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177398-2 MSD	Outfall006_20170218_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 390090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	200.2	389638
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.2	389638
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.2	389638
440-177398-2 MS	Outfall006_20170218_Comp_F	Dissolved	Water	200.2	389638
440-177398-2 MSD	Outfall006_20170218_Comp_F	Dissolved	Water	200.2	389638

Prep Batch: 390380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 390606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-1	Outfall006_20170218_Comp	Total Recoverable	Water	200.8	390380
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.8	390380
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.8	390380
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	390380
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	390380

Analysis Batch: 390630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177398-2	Outfall006_20170218_Comp_F	Dissolved	Water	200.8	390090
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.8	390090
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.8	390090
440-177398-2 MS	Outfall006_20170218_Comp_F	Dissolved	Water	200.8	390090
440-177398-2 MSD	Outfall006_20170218_Comp_F	Dissolved	Water	200.8	390090

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 006 Comp

TestAmerica Job ID: 440-177398-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177398-4

Login Number: 177398

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174197-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 6, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174197-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALLO08_201701 20_GRAB	440-174197-1	N/A	Water	1/20/2017 3:55:00 PM	E1664, E624, SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174197-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory' sample receipt checklist, custody seals were intact.
- Analysis for Human Bacteroidetes was requested in the COC, but was not submitted to the subcontract laboratory; therefore, data for this analysis is not present in the SDG. The client was notified.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on March 8, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile, and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met, with two exceptions. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits, with the exception of CCV %Ds of 75.1% and 74.3% for acrolein, and 42.0% for trichlorofluoromethane. Results for acrolein and trichlorofluoromethane, all nondetects, were qualified as estimated (UJ) in the sample.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall008_20170120_Grab. Recoveries were within the laboratory control limits. The RPD exceeded the control limit of $\leq 25\%$ for trichlorofluoromethane at 54%; however, as trichlorofluoromethane was not detected in the parent sample, qualifications were not assigned.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170120 was identified as the trip blank associated with the site sample in this SDG. Target compounds were not detected above the MDL in the trip blank.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL MINERALS

Marcia Hilchey of MEC^x reviewed the SDG on March 6, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 1664A, *Standard Method for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met. The requested E. coli was prepared within 8 hours of collection; no qualifications were required.



IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing, and biological controls were acceptable.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease). The negative control for *E. coli* was acceptable.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

IV.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL. Results reported below the RL and above the MDL were qualified as estimated (J) and flagged with a DNQ to

IV.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401741971

Analysis Method E1664

Sample Name OUTFALL008_20170120_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 3:55:00 PM Validation Level: 8

Lab Sample Name: 440-174197-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREASE	1.5	4.9	1.4	mg/L	J,DX	J	DNQ

Analysis Method E624

Sample Name OUTFALL008_20170120_GRAB Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 3:55:00 PM Validation Level: 8

Lab Sample Name: 440-174197-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	UJ	C
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	UJ C
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SM9221F

Sample Name OUTFALL008_20170120_GRAB **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 3:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-174197-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	120	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174197-1

Client Project/Site: Annual Outfall 008

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/25/2017 9:20:08 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/25/2017 9:20:08 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174197-1	Outfall008_20170120_Grab	Water	01/20/17 15:55	01/20/17 21:06
440-174197-3	TB-20170120	Water	01/20/17 15:55	01/20/17 21:06

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Job ID: 440-174197-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174197-1

Comments

Human Bacti was not sent to Source Molecular. Sample was in the subcontract fridge. Client was notified of missed analysis.

Receipt

The samples were received on 1/20/2017 9:06 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

GC/MS VOA

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-383982 recovered above the upper control limit for Trichlorofluoromethane. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following samples are impacted: Outfall008_20170120_Grab (440-174197-1), TB-20170120 (440-174197-3) and (CCVIS 440-383982/4).

Method(s) 624: The matrix spike duplicate (MSD) precision for analytical batch 440-383982 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) precision was within acceptance limits.

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-383734 recovered above the upper control limit for Acrolein. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following sample is impacted: TB-20170120 (440-174197-3) and (CCVIS 440-383734/2).

Method(s) 624: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 440-383734 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 624: The continuing calibration verification (CCV) associated with batch 440-383671 recovered above the upper control limit for Acrolein. The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The following sample is impacted: Outfall008_20170120_Grab (440-174197-1) and (CCVIS 440-383671/2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385128 and analytical batch 440-385213. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Client Sample ID: Outfall008_20170120_Grab

Lab Sample ID: 440-174197-1

Date Collected: 01/20/17 15:55

Matrix: Water

Date Received: 01/20/17 21:06

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/22/17 15:11	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Acrolein	ND		5.0	2.5	ug/L			01/22/17 15:11	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/22/17 15:11	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 10:36	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 10:36	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 10:36	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:36	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 10:36	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 10:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 128		01/22/17 15:11	1
Dibromofluoromethane (Surr)	104		76 - 132		01/22/17 15:11	1
4-Bromofluorobenzene (Surr)	96		80 - 120		01/22/17 15:11	1
4-Bromofluorobenzene (Surr)	100		80 - 120		01/24/17 10:36	1
Dibromofluoromethane (Surr)	105		76 - 132		01/24/17 10:36	1
Toluene-d8 (Surr)	107		80 - 128		01/24/17 10:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	1.5	J,DX	4.9	1.4	mg/L		01/30/17 08:28	01/30/17 13:08	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Client Sample ID: Outfall008_20170120_Grab

Lab Sample ID: 440-174197-1

Date Collected: 01/20/17 15:55

Matrix: Water

Date Received: 01/20/17 21:06

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	120		1.8	1.8	MPN/100mL			01/20/17 22:00	1

Client Sample ID: TB-20170120

Lab Sample ID: 440-174197-3

Date Collected: 01/20/17 15:55

Matrix: Water

Date Received: 01/20/17 21:06

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 09:40	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 09:40	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 09:40	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 10:06	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 10:06	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 10:06	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 10:06	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 10:06	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 10:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 128		01/23/17 09:40	1
Dibromofluoromethane (Surr)	106		76 - 132		01/23/17 09:40	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/23/17 09:40	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/24/17 10:06	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Client Sample ID: TB-20170120

Date Collected: 01/20/17 15:55

Date Received: 01/20/17 21:06

Lab Sample ID: 440-174197-3

Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Dibromofluoromethane (Surr)</i>	103		76 - 132		01/24/17 10:06	1
<i>Toluene-d8 (Surr)</i>	107		80 - 128		01/24/17 10:06	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Client Sample ID: Outfall008_20170120_Grab

Lab Sample ID: 440-174197-1

Date Collected: 01/20/17 15:55

Matrix: Water

Date Received: 01/20/17 21:06

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383671	01/22/17 15:11	K1S	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	383982	01/24/17 10:36	AYL	TAL IRV
Total/NA	Prep	1664A			1020 mL	1000 mL	385128	01/30/17 08:28	L2A	TAL IRV
Total/NA	Analysis	1664A		1			385213	01/30/17 13:08	L2A	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384338		KRW	TAL IRV
								(Start) 01/20/17 22:00		
								(End) 01/23/17 21:15		

Client Sample ID: TB-20170120

Lab Sample ID: 440-174197-3

Date Collected: 01/20/17 15:55

Matrix: Water

Date Received: 01/20/17 21:06

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	383734	01/23/17 09:40	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	383982	01/24/17 10:06	AYL	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383671/4

Matrix: Water

Analysis Batch: 383671

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/22/17 08:42	1
Acrolein	ND		5.0	2.5	ug/L			01/22/17 08:42	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/22/17 08:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 128		01/22/17 08:42	1
Dibromofluoromethane (Surr)	105		76 - 132		01/22/17 08:42	1
4-Bromofluorobenzene (Surr)	99		80 - 120		01/22/17 08:42	1

Lab Sample ID: LCS 440-383671/5

Matrix: Water

Analysis Batch: 383671

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	21.6		ug/L		86	37 - 150
Acrolein	25.0	34.8		ug/L		139	10 - 145
Acrylonitrile	250	242		ug/L		97	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	104		80 - 128
Dibromofluoromethane (Surr)	101		76 - 132
4-Bromofluorobenzene (Surr)	96		80 - 120

Lab Sample ID: LCSD 440-383671/6

Matrix: Water

Analysis Batch: 383671

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	25.0	20.7		ug/L		83	37 - 150	4	25
Acrolein	25.0	36.3		ug/L		145	10 - 145	4	30
Acrylonitrile	250	241		ug/L		97	48 - 140	0	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 128
Dibromofluoromethane (Surr)	102		76 - 132
4-Bromofluorobenzene (Surr)	93		80 - 120

Lab Sample ID: 440-174197-1 MS

Matrix: Water

Analysis Batch: 383671

Client Sample ID: Outfall008_20170120_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	21.2		ug/L		85	10 - 140
Acrolein	ND		25.0	22.9		ug/L		92	10 - 147
Acrylonitrile	ND		250	237		ug/L		95	38 - 144

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174197-1 MS
Matrix: Water
Analysis Batch: 383671

Client Sample ID: Outfall008_20170120_Grab
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	96		80 - 120

Lab Sample ID: 440-174197-1 MSD
Matrix: Water
Analysis Batch: 383671

Client Sample ID: Outfall008_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	22.3		ug/L		89	10 - 140	5	25
Acrolein	ND		25.0	26.3		ug/L		105	10 - 147	14	40
Acrylonitrile	ND		250	238		ug/L		95	38 - 144	0	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	104		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	98		80 - 120

Lab Sample ID: MB 440-383734/4
Matrix: Water
Analysis Batch: 383734

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 08:40	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 08:40	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 08:40	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 128		01/23/17 08:40	1
Dibromofluoromethane (Surr)	103		76 - 132		01/23/17 08:40	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/23/17 08:40	1

Lab Sample ID: LCS 440-383734/5
Matrix: Water
Analysis Batch: 383734

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	21.2		ug/L		85	37 - 150
Acrolein	25.0	31.4		ug/L		126	10 - 145
Acrylonitrile	250	225		ug/L		90	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 128
Dibromofluoromethane (Surr)	102		76 - 132
4-Bromofluorobenzene (Surr)	95		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174196-E-1 MS

Matrix: Water

Analysis Batch: 383734

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
2-Chloroethyl vinyl ether	ND		25.0	22.4		ug/L		90	10 - 140	
Acrolein	ND		25.0	ND	LN	ug/L		0	10 - 147	
Acrylonitrile	ND		250	243		ug/L		97	38 - 144	
MS MS										
Surrogate	%Recovery	Qualifier	Limits							
Toluene-d8 (Surr)	100		80 - 128							
Dibromofluoromethane (Surr)	108		76 - 132							
4-Bromofluorobenzene (Surr)	97		80 - 120							

Lab Sample ID: 440-174196-E-1 MSD

Matrix: Water

Analysis Batch: 383734

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD
	Result	Qualifier		Result	Qualifier						Limit	
2-Chloroethyl vinyl ether	ND		25.0	22.6		ug/L		90	10 - 140	1	25	
Acrolein	ND		25.0	ND	LN	ug/L		0	10 - 147	NC	40	
Acrylonitrile	ND		250	236		ug/L		95	38 - 144	3	40	
MSD MSD												
Surrogate	%Recovery	Qualifier	Limits									
Toluene-d8 (Surr)	100		80 - 128									
Dibromofluoromethane (Surr)	105		76 - 132									
4-Bromofluorobenzene (Surr)	102		80 - 120									

Lab Sample ID: MB 440-383982/5

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Benzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Bromoform	ND		1.0	0.40	ug/L			01/24/17 09:04	1
Bromomethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chloroethane	ND		1.0	0.40	ug/L			01/24/17 09:04	1
Chloroform	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Chloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-383982/5
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/24/17 09:04	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Toluene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Trichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/24/17 09:04	1
Naphthalene	ND		1.0	0.40	ug/L			01/24/17 09:04	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/24/17 09:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120		01/24/17 09:04	1
Dibromofluoromethane (Surr)	106		76 - 132		01/24/17 09:04	1
Toluene-d8 (Surr)	105		80 - 128		01/24/17 09:04	1

Lab Sample ID: LCS 440-383982/6
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	26.4		ug/L		105	70 - 130
1,1,1,2-Tetrachloroethane	25.0	24.5		ug/L		98	63 - 130
1,1,2-Trichloroethane	25.0	27.6		ug/L		110	70 - 130
1,1-Dichloroethane	25.0	25.9		ug/L		104	64 - 130
1,1-Dichloroethene	25.0	24.5		ug/L		98	70 - 130
1,2-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
1,2-Dichloroethane	25.0	26.4		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	25.6		ug/L		102	67 - 130
1,3-Dichlorobenzene	25.0	26.1		ug/L		104	70 - 130
1,4-Dichlorobenzene	25.0	23.9		ug/L		96	70 - 130
Benzene	25.0	25.0		ug/L		100	68 - 130
Bromoform	25.0	27.5		ug/L		110	60 - 148
Bromomethane	25.0	23.1		ug/L		92	64 - 139
Carbon tetrachloride	25.0	26.8		ug/L		107	60 - 150
Chlorobenzene	25.0	24.7		ug/L		99	70 - 130
Dibromochloromethane	25.0	27.5		ug/L		110	69 - 145
Chloroethane	25.0	23.4		ug/L		94	64 - 135
Chloroform	25.0	26.1		ug/L		104	70 - 130
Chloromethane	25.0	24.7		ug/L		99	47 - 140
cis-1,3-Dichloropropene	25.0	26.5		ug/L		106	70 - 133
Bromodichloromethane	25.0	26.9		ug/L		108	70 - 132
Ethylbenzene	25.0	24.8		ug/L		99	70 - 130
Methylene Chloride	25.0	24.6		ug/L		99	52 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-383982/6
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tetrachloroethene	25.0	26.2		ug/L		105	70 - 130
Toluene	25.0	24.9		ug/L		100	70 - 130
trans-1,2-Dichloroethene	25.0	26.1		ug/L		104	70 - 130
trans-1,3-Dichloropropene	25.0	25.9		ug/L		103	70 - 132
Trichlorofluoromethane	25.0	26.8		ug/L		107	60 - 150
Vinyl chloride	25.0	22.0		ug/L		88	59 - 133
Trichloroethene	25.0	27.5		ug/L		110	70 - 130
cis-1,2-Dichloroethene	25.0	26.8		ug/L		107	70 - 133
Naphthalene	25.0	26.5		ug/L		106	60 - 140
Xylenes, Total	50.0	52.1		ug/L		104	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	102		80 - 128

Lab Sample ID: 440-174197-1 MS
Matrix: Water
Analysis Batch: 383982

Client Sample ID: Outfall008_20170120_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	26.3		ug/L		105	70 - 130
1,1,1,2-Tetrachloroethane	ND		25.0	24.6		ug/L		98	63 - 130
1,1,1,2-Trichloroethane	ND		25.0	28.2		ug/L		113	70 - 130
1,1-Dichloroethane	ND		25.0	25.9		ug/L		104	65 - 130
1,1-Dichloroethene	ND		25.0	25.3		ug/L		101	70 - 130
1,2-Dichlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130
1,2-Dichloroethane	ND		25.0	26.8		ug/L		107	56 - 146
1,2-Dichloropropane	ND		25.0	25.7		ug/L		103	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130
1,4-Dichlorobenzene	ND		25.0	24.1		ug/L		96	70 - 130
Benzene	ND		25.0	24.8		ug/L		99	66 - 130
Bromoform	ND		25.0	27.5		ug/L		110	59 - 150
Bromomethane	ND		25.0	21.6		ug/L		87	62 - 131
Carbon tetrachloride	ND		25.0	26.9		ug/L		108	60 - 150
Chlorobenzene	ND		25.0	25.2		ug/L		101	70 - 130
Dibromochloromethane	ND		25.0	27.7		ug/L		111	70 - 148
Chloroethane	ND		25.0	22.6		ug/L		90	68 - 130
Chloroform	ND		25.0	26.5		ug/L		106	70 - 130
Chloromethane	ND		25.0	26.9		ug/L		107	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.5		ug/L		106	70 - 133
Bromodichloromethane	ND		25.0	27.4		ug/L		110	70 - 138
Ethylbenzene	ND		25.0	24.8		ug/L		99	70 - 130
Methylene Chloride	ND		25.0	26.1		ug/L		105	52 - 130
Tetrachloroethene	ND		25.0	26.5		ug/L		106	70 - 137
Toluene	ND		25.0	25.4		ug/L		101	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.9		ug/L		103	70 - 138

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174197-1 MS

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Outfall008_20170120_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichlorofluoromethane	ND		25.0	33.6		ug/L		135	60 - 150
Vinyl chloride	ND		25.0	23.2		ug/L		93	50 - 137
Trichloroethene	ND		25.0	26.7		ug/L		107	70 - 130
cis-1,2-Dichloroethene	ND		25.0	27.0		ug/L		108	70 - 130
Naphthalene	ND		25.0	26.4		ug/L		105	60 - 140
Xylenes, Total	ND		50.0	52.4		ug/L		105	70 - 133

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Lab Sample ID: 440-174197-1 MSD

Matrix: Water

Analysis Batch: 383982

Client Sample ID: Outfall008_20170120_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.3		ug/L		101	70 - 130	4	20
1,1,1,2-Tetrachloroethane	ND		25.0	24.0		ug/L		96	63 - 130	2	30
1,1,1,2-Trichloroethane	ND		25.0	27.2		ug/L		109	70 - 130	3	25
1,1-Dichloroethane	ND		25.0	24.8		ug/L		99	65 - 130	4	20
1,1-Dichloroethene	ND		25.0	23.8		ug/L		95	70 - 130	6	20
1,2-Dichlorobenzene	ND		25.0	24.6		ug/L		99	70 - 130	0	20
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146	4	20
1,2-Dichloropropane	ND		25.0	25.0		ug/L		100	69 - 130	2	20
1,3-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	24.1		ug/L		97	70 - 130	0	20
Benzene	ND		25.0	24.0		ug/L		96	66 - 130	3	20
Bromoform	ND		25.0	27.0		ug/L		108	59 - 150	2	25
Bromomethane	ND		25.0	20.2		ug/L		81	62 - 131	7	25
Carbon tetrachloride	ND		25.0	26.0		ug/L		104	60 - 150	4	25
Chlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	3	20
Dibromochloromethane	ND		25.0	27.2		ug/L		109	70 - 148	2	25
Chloroethane	ND		25.0	22.2		ug/L		89	68 - 130	2	25
Chloroform	ND		25.0	25.1		ug/L		100	70 - 130	5	20
Chloromethane	ND		25.0	25.3		ug/L		101	39 - 144	6	25
cis-1,3-Dichloropropene	ND		25.0	25.7		ug/L		103	70 - 133	3	20
Bromodichloromethane	ND		25.0	26.2		ug/L		105	70 - 138	5	20
Ethylbenzene	ND		25.0	24.1		ug/L		96	70 - 130	3	20
Methylene Chloride	ND		25.0	24.3		ug/L		97	52 - 130	7	20
Tetrachloroethene	ND		25.0	25.9		ug/L		104	70 - 137	2	20
Toluene	ND		25.0	24.7		ug/L		99	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.1		ug/L		104	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	26.0		ug/L		104	70 - 138	1	25
Trichlorofluoromethane	ND		25.0	19.4	BA	ug/L		77	60 - 150	54	25
Vinyl chloride	ND		25.0	22.1		ug/L		88	50 - 137	5	30
Trichloroethene	ND		25.0	26.5		ug/L		106	70 - 130	1	20
cis-1,2-Dichloroethene	ND		25.0	26.3		ug/L		105	70 - 130	3	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174197-1 MSD

Client Sample ID: Outfall008_20170120_Grab

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 383982

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		25.0	26.0		ug/L		104	60 - 140	1	30
Xylenes, Total	ND		50.0	51.2		ug/L		102	70 - 133	2	20
Surrogate	%Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	96		80 - 120								
Dibromofluoromethane (Surr)	102		76 - 132								
Toluene-d8 (Surr)	103		80 - 128								

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-385128/1-A

Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 385213

Prep Batch: 385128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/30/17 08:28	01/30/17 13:08	1

Lab Sample ID: LCS 440-385128/2-A

Client Sample ID: Lab Control Sample

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 385213

Prep Batch: 385128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.7		mg/L		92	78 - 114

Lab Sample ID: LCSD 440-385128/3-A

Client Sample ID: Lab Control Sample Dup

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 385213

Prep Batch: 385128

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	35.9		mg/L		90	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

GC/MS VOA

Analysis Batch: 383671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174197-1	Outfall008_20170120_Grab	Total/NA	Water	624	
MB 440-383671/4	Method Blank	Total/NA	Water	624	
LCS 440-383671/5	Lab Control Sample	Total/NA	Water	624	
LCSD 440-383671/6	Lab Control Sample Dup	Total/NA	Water	624	
440-174197-1 MS	Outfall008_20170120_Grab	Total/NA	Water	624	
440-174197-1 MSD	Outfall008_20170120_Grab	Total/NA	Water	624	

Analysis Batch: 383734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174197-3	TB-20170120	Total/NA	Water	624	
MB 440-383734/4	Method Blank	Total/NA	Water	624	
LCS 440-383734/5	Lab Control Sample	Total/NA	Water	624	
440-174196-E-1 MS	Matrix Spike	Total/NA	Water	624	
440-174196-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 383982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174197-1	Outfall008_20170120_Grab	Total/NA	Water	624	
440-174197-3	TB-20170120	Total/NA	Water	624	
MB 440-383982/5	Method Blank	Total/NA	Water	624	
LCS 440-383982/6	Lab Control Sample	Total/NA	Water	624	
440-174197-1 MS	Outfall008_20170120_Grab	Total/NA	Water	624	
440-174197-1 MSD	Outfall008_20170120_Grab	Total/NA	Water	624	

General Chemistry

Prep Batch: 385128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174197-1	Outfall008_20170120_Grab	Total/NA	Water	1664A	
MB 440-385128/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-385128/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-385128/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 385213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174197-1	Outfall008_20170120_Grab	Total/NA	Water	1664A	385128
MB 440-385128/1-A	Method Blank	Total/NA	Water	1664A	385128
LCS 440-385128/2-A	Lab Control Sample	Total/NA	Water	1664A	385128
LCSD 440-385128/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	385128

Biology

Analysis Batch: 384338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174197-1	Outfall008_20170120_Grab	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
BA	Relative percent difference out of control

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008

TestAmerica Job ID: 440-174197-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



CHAIN OF CUSTODY FORM

Test America

440-174197 Chain of Custody

VL400 VIKT

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [008] Outfall 008 Grab		Field Readings Meter serial # Field Readings: (Include units) Time of Readings: 1640							
Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		pH 6.20 pH unit Temp 8.34 °C/F							
Sampler: Roy Barajas		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Field readings QC Checked by: RB Date/Time: 1-20-17/1645							
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED		Comments
Outfall 008	Outfall008_20170120_Grab	1/20/2017 / 1555	WM	125 mL Sterile Poly	1	None	5	No	MST-Bacteroides, Human	VOCS (624) - only A+A + 20VE	Deliver to lab ASAP 8 hr hold time
			WM	125 mL Sterile Poly	3	Na2S2O3	10	No		VOCS PP + xylenes, Freon 11	Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions
			WM	1 L Glass Amber	2	HCl	15	No		Oil & Grease (1664-HEM)	
			WM	40 mL VOA	3	HCl	40	No			
			WM	40 mL VOA	9	None	55	Yes			
			WM	1 L Glass Amber	2	HCl	15	No			
	Outfall008_20170120_Grab_Extra	1/20/2017 / 1555	WM	40 mL VOA	3	HCl	40	No			
			WM	40 mL VOA	9	None	55	No			
Trip Blanks	TB-20170120	1/20/2017 / 1555	WQ	40 mL VOA	2	HCl	40	No			
			WQ	40 mL VOA	2	None	55	No			

These Samples are the Grab Portion of Outfall 008 for this storm event. Composite samples will follow and are to be added to this work order.

Relinquished By 	Date/Time: 01/20/17 1700 JHA	Company: JHA	Received By 	Date/Time: 1-20-17 1700	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By 	Date/Time: 1-20-17 1845 WOS	Company: WOS	Received By 	Date/Time: 20-1-17	Sample Integrity: (Check) Intact: _____ On Ice: _____ 1278 34/3.6
Relinquished By 	Date/Time: 1-20-17 2106 D.C.S.	Company: D.C.S.	Received By 	Date/Time: 120/17	Data Requirements: (Check) No Level IV: _____ All Level IV: _____ 8106



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174197-1

SDG Number:

Login Number: 174197

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174236-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 6, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174236-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL008_20170121_COMP	440-174236-1	N/A	Water	1/21/2017 12:30:00 PM	E1613B, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E525.2, E608, E625, SM2340B, SM2540C/D, SM4500-CN-E, SM4500-NH3G, EPA 821/R-02-013, 100.2
Outfall008_20170121_Comp_F	440-174236-2	N/A	Water	1/21/2017 12:30:00 PM	E200.7, E200.8, E245.1, SM2340B



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174238-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- Analysis of asbestos (Method 100.2) was subcontracted to LA Testing laboratory. The COC and sample receipt information for shipment of the sample was not included in the data package. No sample results were qualified.
- Analysis of chronic toxicity (bioassay method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.

The following issue was noted:

- The correction on the original COC was not initialed and dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG. The revised collection times and dates are reflected in the SDG; therefore, the sample collection dates and times on the COC do not match those in the SDG. The collection information in the SDG was used for this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample OUTFALL008_20170121_COMP. The result for total HPCDD was qualified as nondetected (U). The reviewer verified that peaks comprising total



HpCDF in the sample included more peaks than the method blank total. The sample result for total HpCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Reported EMPCs for isomers 1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, and 2,3,4,6,7,8-HxCDF, were qualified as estimated nondetects (UJ). Totals HxCDD and HxCDF containing EMPC peaks were qualified as estimated (J).

IV. METHODS 200.7, 200.8, 245.1 AND SM2340B— METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^x reviewed the SDG on March 6, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8, and 245.1*, *Standard Method 2340B*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall008_20170121_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 9 days after receipt. All dissolved metals, dissolved mercury and hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results. It should be noted that a dissolved method blank was not analyzed for dissolved 200.7 analytes.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115% with the exception of dissolved mercury (117%). The associated sample result was nondetect and was not qualified. It should be noted that a dissolved LCS was not analyzed for dissolved 200.7 analytes.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall008_20170121_Comp and Outfall009_20170121_Comp_F for all methods. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control



limits of 70-130% and $\leq 20\%$, respectively, with the exception of recoveries for total thallium (30%/32%). The result for total thallium was qualified as estimated with low potential bias (UJ).

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

L. Calvin of MEC^X reviewed the SDG on March 7, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.



V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^x evaluated method accuracy based on the LCS results.

V.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 960 milliliters for both pesticides and PCBs was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.



VI. EPA METHOD 314.0 — PERCHLORATE

Marcia Hilchey of MEC^X reviewed the SDG on March 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1)*, *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSD $\leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and %Ds were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 915 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 525.2*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VIII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.

VIII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. The sample was analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recoveries and RPDs were within the control limits of 70-130% and $\leq 30\%$, respectively.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within laboratory-established control limits of 70-130%.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy and precision based on the LCS/LCSD results.

VIII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VIII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 950 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 7, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 100.2, 218.6, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G and 4500-CN-E, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IX.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for asbestos analysis past the 48 hour holding time and was analyzed 3 days past the required holding time. The laboratory subjected the sample to UV and ozonation to minimize bacteriological growth. Hexavalent chromium was analyzed 26 minutes past the 24 hour holding time requirement. Nitrate as N and nitrite as N were analyzed 49 minutes past the 48 hour holding time requirement. Results for asbestos, hexavalent chromium, nitrate as N, nitrite as N, and nitrate/nitrate were qualified as estimated (UJ). Chronic toxicity was analyzed 4.5 days past the 36 hour holding time requirement. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity. Calibration information was not provided for asbestos analysis.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.

IX.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

IX.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IX.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.



IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

It should be noted that no laboratory QC or raw data was presented in the SDG for asbestos analysis; however, the laboratory noted that the method-required analytical sensitivity of 0.2 MFL was not met due to high particulate content of the sample.

IX.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401742361

Analysis Method E1613B

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000011	0.000094	0.00000039	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00024	0.000094	0.00000057	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000084	0.000047	0.00000034	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000024	0.000047	0.00000066	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000015	0.000047	0.00000041	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000014	0.000047	0.00000073	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000012	0.000047	0.00000042	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000014	0.000047	0.00000069	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000020	0.000047	0.00000044	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000009	0.000047	0.00000052	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000018	0.000047	0.00000036	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000047	0.00000045	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000047	0.00000073	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000012	0.000047	0.00000056	ug/L	J,DXq	UJ	*III
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000047	0.00000046	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000013	0.000094	0.00000041	ug/L	J,DX	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000094	0.0000012	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000094	0.00000054	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000015	0.000047	0.00000038	ug/L	J,DXMB	J	B, DNQ

Analysis Method E1613B

Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000053	0.000047	0.00000066	ug/L	MB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000011	0.000047	0.00000063	ug/L	J,DXq	J	DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000089	0.000047	0.00000041	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000009	0.000047	0.00000045	ug/L	J,DX	J	DNQ
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000047	0.00000073	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000013	0.0000094	0.00000041	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000094	0.00000054	ug/L	U	U	

Analysis Method E200.7

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	4900	100	50	ug/L			
Arsenic	T	7440-38-2	5.4	10	5.0	ug/L	J,DX	J	DNQ
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.070	0.050	0.025	mg/L			
Chromium	T	7440-47-3	6.7	5.0	2.5	ug/L			
Iron	T	7439-89-6	6.8	0.10	0.050	mg/L			
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	13	10	5.0	ug/L			
Zinc	T	7440-66-6	29	20	10	ug/L			

Sample Name Outfall008_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	D	7429-90-5	200	100	50	ug/L	QP	J	H
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Boron	D	7440-42-8	0.061	0.050	0.025	mg/L	QP	J	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	0.18	0.10	0.050	mg/L	QP	J	H

Analysis Method E200.7

Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.65	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	6.7	2.0	0.50	ug/L	MB		
Lead	T	7439-92-1	4.0	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	UJ	Q

Sample Name Outfall008_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.6	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	UBUBVIB	UJ	H

Analysis Method E245.1**Sample Name** OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 12:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall008_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 12:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174236-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	ULQQP	UJ	H

Analysis Method E300**Sample Name** OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 12:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.9	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrate (as N)	N	14797-55-8	ND	0.11	0.055	mg/L	BU	UJ	H
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	UBU	UJ	H
Nitrite/Nitrate	N	NO2NO3	2.1	0.15	0.070	mg/L	BU	UJ	H
Sulfate	N	14808-79-8	4.3	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 12:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E525.2**Sample Name** OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 12:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	ND	1.1	0.53	ug/L	U	U	
Diazinon	N	333-41-5	ND	0.26	0.13	ug/L	U	U	

Analysis Method E608**Sample Name** OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 12:30:00 PM **Validation Level:** 8**Lab Sample Name:** 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0052	0.0042	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0052	0.0031	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.010	0.0042	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0052	0.0016	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0052	0.0026	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.52	0.26	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.52	0.26	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.52	0.26	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.52	0.26	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.52	0.26	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.52	0.26	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.52	0.26	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.010	0.0042	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.10	0.083	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0052	0.0036	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0052	0.0021	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0052	0.0031	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0052	0.0021	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.010	0.0031	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0052	0.0021	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.010	0.0021	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.010	0.0031	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.010	0.0031	ug/L	U	U	

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Heptachlor epoxide	N	1024-57-3	ND	0.0052	0.0026	ug/L	U	U
Toxaphene	N	8001-35-2	ND	0.52	0.26	ug/L	U	U

Analysis Method E625

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	5.46	2.73	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	2.73	1.09	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	5.46	2.73	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	2.73	1.09	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	2.73	1.09	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	2.73	1.09	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	5.46	2.73	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	10.9	5.46	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	10.9	5.46	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	27.3	10.9	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	27.3	10.9	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2	ND	27.3	10.9	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	ND	2.73	1.09	ug/L	U	U	
2-Chlorophenol	N	95-57-8	ND	5.46	2.73	ug/L	U	U	
2-Nitrophenol	N	88-75-5	ND	10.9	5.46	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	ND	27.3	10.9	ug/L	U	U	
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	27.3	10.9	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3	ND	5.46	2.73	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	ND	10.9	1.09	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	2.73	1.09	ug/L	U	U	
4-Nitrophenol	N	100-02-7	ND	27.3	10.9	ug/L	U	U	
Acenaphthene	N	83-32-9	ND	2.73	1.09	ug/L	U	U	
Acenaphthylene	N	208-96-8	ND	2.73	1.09	ug/L	U	U	
Anthracene	N	120-12-7	ND	2.73	1.09	ug/L	U	U	
Benzidine	N	92-87-5	ND	54.6	27.3	ug/L	U	U	
Benzo(a)anthracene	N	56-55-3	ND	27.3	10.9	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	ND	10.9	2.73	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2	ND	10.9	5.46	ug/L	U	U	

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Benzo(g,h,i)perylene	N	191-24-2	ND	27.3	10.9	ug/L	U	U
Benzo(k)fluoranthene	N	207-08-9	ND	2.73	1.37	ug/L	U	U
bis(2-Chloroethoxy)methane	N	111-91-1	ND	2.73	1.09	ug/L	U	U
bis(2-Chloroethyl)ether	N	111-44-4	ND	2.73	1.09	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	27.3	10.9	ug/L	U	U
Butyl benzylphthalate	N	85-68-7	ND	27.3	10.9	ug/L	U	U
Chrysene	N	218-01-9	ND	2.73	1.09	ug/L	U	U
Dibenz(a,h)anthracene	N	53-70-3	ND	2.73	1.37	ug/L	U	U
Diethyl phthalate	N	84-66-2	ND	5.46	2.73	ug/L	U	U
Dimethyl phthalate	N	131-11-3	ND	2.73	1.37	ug/L	U	U
Di-n-butylphthalate	N	84-74-2	ND	10.9	5.46	ug/L	U	U
Di-n-octyl phthalate	N	117-84-0	ND	27.3	10.9	ug/L	U	U
Fluoranthene	N	206-44-0	ND	2.73	1.09	ug/L	U	U
Fluorene	N	86-73-7	ND	2.73	1.09	ug/L	U	U
Hexachlorobenzene	N	118-74-1	ND	5.46	2.73	ug/L	U	U
Hexachlorobutadiene	N	87-68-3	ND	10.9	2.73	ug/L	U	U
Hexachlorocyclopentadiene	N	77-47-4	ND	27.3	10.9	ug/L	U	U
Hexachloroethane	N	67-72-1	ND	16.4	2.73	ug/L	U	U
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	10.9	5.46	ug/L	U	U
Isophorone	N	78-59-1	ND	5.46	2.73	ug/L	U	U
Naphthalene	N	91-20-3	ND	5.46	2.73	ug/L	U	U
Nitrobenzene	N	98-95-3	ND	5.46	2.73	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	10.9	5.46	ug/L	U	U
N-Nitrosodi-n-propylamine	N	621-64-7	ND	10.9	5.46	ug/L	U	U
N-Nitrosodiphenylamine	N	86-30-6	ND	5.46	2.73	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	10.9	5.46	ug/L	U	U
Phenanthrene	N	85-01-8	ND	2.73	1.09	ug/L	U	U
Phenol	N	108-95-2	ND	5.46	2.73	ug/L	U	U
Pyrene	N	129-00-0	ND	2.73	1.09	ug/L	U	U

Analysis Method EPA100.2

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Asbestos	N	1332-21-4				MFL	U	UJ	H

Analysis Method *EPA-821-R-02-013*

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	41.73			% SURV		J	H

Analysis Method *SM2340*

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	48	0.33	0.17	mg/L			

Sample Name Outfall008_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	34	0.33	0.17	mg/L		J	H

Analysis Method *SM2540C*

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	120	10	5.0	mg/L			

Analysis Method *SM2540D*

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	45	5.0	2.5	mg/L			

Analysis Method *SM4500-CN-E*

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method *SM4500-NH3G*

Sample Name OUTFALL008_20170121_COM **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174236-1

Client Project/Site: Annual Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/27/2017 6:13:50 PM

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www.testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/27/2017 6:13:50 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174236-1	Outfall008_20170121_Comp	Water	01/21/17 12:30	01/22/17 16:15
440-174236-2	Outfall008_20170121_Comp_F	Water	01/21/17 12:30	01/22/17 16:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Job ID: 440-174236-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174236-1

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.2° C, 2.9° C, 4.1° C and 4.9° C.

GC/MS Semi VOA

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for benzidine and 3,3'-dichlorobenzidine of preparation batch 440-384349 and analytical batch 440-385461 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-384349 and analytical batch 440-385461 was outside control limits for several analytes. Sample matrix interference is suspected.

Method(s) 625: The following sample was diluted due to the abundance of non-target analytes: Outfall008_20170121_Comp (440-174236-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: The following sample was analyzed outside of analytical holding time for Nitrate as N and Nitrite as N due to analyst oversight (samples received over the weekend): Outfall008_20170121_Comp (440-174236-1).

Method(s) 218.6: The continuing calibration verification (CCV) associated with batch 440-383776 recovered above the upper control limit for hexavalent chromium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 218.6: The following sample was received outside of holding time: Outfall008_20170121_Comp (440-174236-1) and (440-174234-K-1).

Method(s) NO3NO2 Calc: The following sample was analyzed outside of analytical holding time for Nitrate as N and Nitrite as N due to analyst oversight (samples received over the weekend): Outfall008_20170121_Comp (440-174236-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Surrogate recovery for the following samples was outside control limits: (440-174234-T-1-A). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed. (Emulsion during extraction procedure),

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 245.1: The laboratory control sample (LCS) for preparation batch 440-385307 and 440-385533 and analytical batch 440-385844 recovered outside control limits for Mercury. These analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Job ID: 440-174236-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) 200.8: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-384924 and analytical batch 440-385906 were outside control limits for Thallium. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Method Asbestos 100.2: This method was subcontracted to LA Testing. The subcontract laboratory certification is different from that of the facility issuing the final report.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.1	0.53	ug/L		01/22/17 08:31	01/24/17 19:44	1
Diazinon	ND		0.26	0.13	ug/L		01/22/17 08:31	01/24/17 19:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	98		70 - 130				01/22/17 08:31	01/24/17 19:44	1
Perylene-d12	76		70 - 130				01/22/17 08:31	01/24/17 19:44	1
Triphenylphosphate	116		70 - 130				01/22/17 08:31	01/24/17 19:44	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Acenaphthylene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Anthracene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Benzidine	ND		54.6	27.3	ug/L		01/25/17 13:07	01/31/17 21:38	5
Benzo[a]anthracene	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
Benzo[b]fluoranthene	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
Benzo[k]fluoranthene	ND		2.73	1.37	ug/L		01/25/17 13:07	01/31/17 21:38	5
Benzo[a]pyrene	ND		10.9	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Bis(2-chloroethoxy)methane	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Bis(2-chloroethyl)ether	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Bis(2-ethylhexyl) phthalate	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
4-Bromophenyl phenyl ether	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Butyl benzyl phthalate	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
4-Chloro-3-methylphenol	ND		10.9	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
2-Chloronaphthalene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
2-Chlorophenol	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
4-Chlorophenyl phenyl ether	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Chrysene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Dibenz(a,h)anthracene	ND		2.73	1.37	ug/L		01/25/17 13:07	01/31/17 21:38	5
Di-n-butyl phthalate	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
1,2-Dichlorobenzene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
1,3-Dichlorobenzene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
1,4-Dichlorobenzene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
3,3'-Dichlorobenzidine	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
2,4-Dichlorophenol	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
Diethyl phthalate	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
2,4-Dimethylphenol	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
Dimethyl phthalate	ND		2.73	1.37	ug/L		01/25/17 13:07	01/31/17 21:38	5
4,6-Dinitro-2-methylphenol	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
2,4-Dinitrophenol	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
2,4-Dinitrotoluene	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
2,6-Dinitrotoluene	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
Di-n-octyl phthalate	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
1,2-Diphenylhydrazine(as Azobenzene)	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Fluoranthene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Fluorene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Hexachlorobenzene	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Hexachlorobutadiene	ND		10.9	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Hexachloroethane	ND		16.4	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
Indeno[1,2,3-cd]pyrene	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
Isophorone	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Naphthalene	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Nitrobenzene	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
2-Nitrophenol	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
4-Nitrophenol	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
N-Nitrosodimethylamine	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
N-Nitrosodiphenylamine	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
N-Nitrosodi-n-propylamine	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
Pentachlorophenol	ND		10.9	5.46	ug/L		01/25/17 13:07	01/31/17 21:38	5
Phenanthrene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
Phenol	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Pyrene	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5
1,2,4-Trichlorobenzene	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
2,4,6-Trichlorophenol	ND		5.46	2.73	ug/L		01/25/17 13:07	01/31/17 21:38	5
Benzo[g,h,i]perylene	ND		27.3	10.9	ug/L		01/25/17 13:07	01/31/17 21:38	5
bis (2-chloroisopropyl) ether	ND		2.73	1.09	ug/L		01/25/17 13:07	01/31/17 21:38	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	64		50 - 120	01/25/17 13:07	01/31/17 21:38	5
2-Fluorophenol	53		30 - 120	01/25/17 13:07	01/31/17 21:38	5
2,4,6-Tribromophenol	69		40 - 120	01/25/17 13:07	01/31/17 21:38	5
Nitrobenzene-d5	66		45 - 120	01/25/17 13:07	01/31/17 21:38	5
Terphenyl-d14	48		37 - 144	01/25/17 13:07	01/31/17 21:38	5
Phenol-d6	53		35 - 120	01/25/17 13:07	01/31/17 21:38	5

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1
Aroclor 1221	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1
Aroclor 1232	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1
Aroclor 1242	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1
Aroclor 1248	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1
Aroclor 1254	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1
Aroclor 1260	ND		0.52	0.26	ug/L		01/23/17 07:27	01/24/17 23:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	31		29 - 115	01/23/17 07:27	01/24/17 23:50	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0052	0.0016	ug/L		01/23/17 07:27	01/23/17 21:13	1
alpha-BHC	ND		0.0052	0.0026	ug/L		01/23/17 07:27	01/23/17 21:13	1
beta-BHC	ND		0.010	0.0042	ug/L		01/23/17 07:27	01/23/17 21:13	1
Chlordane (technical)	ND		0.10	0.083	ug/L		01/23/17 07:27	01/23/17 21:13	1
delta-BHC	ND		0.0052	0.0036	ug/L		01/23/17 07:27	01/23/17 21:13	1
Dieldrin	ND		0.0052	0.0021	ug/L		01/23/17 07:27	01/23/17 21:13	1
Endosulfan I	ND		0.0052	0.0031	ug/L		01/23/17 07:27	01/23/17 21:13	1
Endosulfan II	ND		0.0052	0.0021	ug/L		01/23/17 07:27	01/23/17 21:13	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		0.010	0.0031	ug/L		01/23/17 07:27	01/23/17 21:13	1
Endrin	ND		0.0052	0.0021	ug/L		01/23/17 07:27	01/23/17 21:13	1
Endrin aldehyde	ND		0.010	0.0021	ug/L		01/23/17 07:27	01/23/17 21:13	1
gamma-BHC (Lindane)	ND		0.010	0.0031	ug/L		01/23/17 07:27	01/23/17 21:13	1
Heptachlor	ND		0.010	0.0031	ug/L		01/23/17 07:27	01/23/17 21:13	1
Heptachlor epoxide	ND		0.0052	0.0026	ug/L		01/23/17 07:27	01/23/17 21:13	1
Toxaphene	ND		0.52	0.26	ug/L		01/23/17 07:27	01/23/17 21:13	1
4,4'-DDD	ND		0.0052	0.0042	ug/L		01/23/17 07:27	01/23/17 21:13	1
4,4'-DDE	ND		0.0052	0.0031	ug/L		01/23/17 07:27	01/23/17 21:13	1
4,4'-DDT	ND		0.010	0.0042	ug/L		01/23/17 07:27	01/23/17 21:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	68		10 - 150				01/23/17 07:27	01/23/17 21:13	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND	BU BV IB	1.0	0.25	ug/L			01/23/17 12:56	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.9		0.50	0.25	mg/L			01/23/17 13:19	1
Nitrate as N	2.1	BU	0.11	0.055	mg/L			01/23/17 13:19	1
Fluoride	ND		0.50	0.25	mg/L			01/23/17 13:19	1
Nitrite as N	ND	BU	0.15	0.070	mg/L			01/23/17 13:19	1
Sulfate	4.3		0.50	0.25	mg/L			01/23/17 13:19	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 11:47	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.1	BU	0.15	0.070	mg/L			01/31/17 13:32	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000094	0.0000005	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,7,8-PeCDD	ND		0.000047	0.0000007	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,7,8-PeCDF	ND		0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
2,3,4,7,8-PeCDF	ND		0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,4,7,8-HxCDD	0.0000012	J,DX q	0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,6,7,8-HxCDD	0.0000020	J,DX	0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,7,8,9-HxCDD	0.0000018	J,DX	0.000047	0.0000003	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,4,7,8-HxCDF	0.0000014	J,DX q	0.000047	0.0000007	ug/L		01/26/17 08:49	01/28/17 10:34	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	0.0000014	J,DX	0.000047	0.0000006	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,7,8,9-HxCDF	0.00000095	J,DX	0.000047	0.0000005	ug/L		01/26/17 08:49	01/28/17 10:34	1
2,3,4,6,7,8-HxCDF	0.0000012	J,DX q	0.000047	0.0000005	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,4,6,7,8-HpCDD	0.000024	J,DX MB	0.000047	0.0000006	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,4,6,7,8-HpCDF	0.0000084	J,DX MB	0.000047	0.0000003	ug/L		01/26/17 08:49	01/28/17 10:34	1
1,2,3,4,7,8,9-HpCDF	0.0000015	J,DX MB	0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
OCDD	0.00024	MB	0.000094	0.0000005	ug/L		01/26/17 08:49	01/28/17 10:34	1
OCDF	0.000011	J,DX MB	0.000094	0.0000003	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total TCDD	ND		0.000094	0.0000005	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total TCDF	0.0000013	J,DX	0.000094	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total PeCDD	ND		0.000047	0.0000007	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total PeCDF	0.00000092	J,DX	0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total HxCDD	0.0000089	J,DX q	0.000047	0.0000004	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total HxCDF	0.000011	J,DX q	0.000047	0.0000006	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total HpCDD	0.000053	MB	0.000047	0.0000006	ug/L		01/26/17 08:49	01/28/17 10:34	1
Total HpCDF	0.000015	J,DX MB	0.000047	0.0000003	ug/L		01/26/17 08:49	01/28/17 10:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	67		25 - 164				01/26/17 08:49	01/28/17 10:34	1
13C-2,3,7,8-TCDF	60		24 - 169				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				01/26/17 08:49	01/28/17 10:34	1
13C-2,3,4,7,8-PeCDF	69		21 - 178				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,6,7,8-HxCDD	69		28 - 130				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,4,7,8-HxCDF	66		26 - 152				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,7,8,9-HxCDF	62		29 - 147				01/26/17 08:49	01/28/17 10:34	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,4,6,7,8-HpCDD	81		23 - 140				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143				01/26/17 08:49	01/28/17 10:34	1
13C-1,2,3,4,7,8,9-HpCDF	77		26 - 138				01/26/17 08:49	01/28/17 10:34	1
13C-OCDD	92		17 - 157				01/26/17 08:49	01/28/17 10:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197				01/26/17 08:49	01/28/17 10:34	1

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000094	0.0000012	ug/L		01/26/17 08:49	01/30/17 18:27	1
Isotope Dilution		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF		57		24 - 169			01/26/17 08:49	01/30/17 18:27	1
Surrogate		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD		90		35 - 197			01/26/17 08:49	01/30/17 18:27	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	4900		100	50	ug/L		01/27/17 14:58	02/01/17 12:21	1
Arsenic	5.4	J,DX	10	5.0	ug/L		01/27/17 14:58	02/01/17 12:21	1
Boron	0.070		0.050	0.025	mg/L		01/27/17 14:58	02/01/17 12:21	1
Beryllium	ND		2.0	1.0	ug/L		01/27/17 14:58	02/01/17 12:21	1
Chromium	6.7		5.0	2.5	ug/L		01/27/17 14:58	02/01/17 12:21	1
Iron	6.8		0.10	0.050	mg/L		01/27/17 14:58	02/01/17 12:21	1
Nickel	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:21	1
Vanadium	13		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:21	1
Zinc	29		20	10	ug/L		01/27/17 14:58	02/01/17 12:21	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/27/17 14:59	02/01/17 18:15	1
Copper	6.7	MB	2.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:15	1
Lead	4.0		1.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:15	1
Antimony	0.65	J,DX	2.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:15	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:15	1
Thallium	ND		1.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:15	1
Silver	ND		1.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:15	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 22:10	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	48		0.33	0.17	mg/L			02/02/17 13:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	120		10	5.0	mg/L			01/26/17 08:21	1
Total Suspended Solids	45		5.0	2.5	mg/L			01/26/17 19:56	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:17	1
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 14:06	1

Client Sample ID: Outfall008_20170121_Comp_F

Lab Sample ID: 440-174236-2

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	200	QP	100	50	ug/L		01/31/17 14:03	02/01/17 18:19	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp_F

Lab Sample ID: 440-174236-2

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		01/31/17 14:03	02/01/17 18:19	1
Boron	0.061	QP	0.050	0.025	mg/L		01/31/17 14:03	02/01/17 18:19	1
Beryllium	ND	QP	2.0	1.0	ug/L		01/31/17 14:03	02/01/17 18:19	1
Chromium	ND	QP	5.0	2.5	ug/L		01/31/17 14:03	02/01/17 18:19	1
Iron	0.18	QP	0.10	0.050	mg/L		01/31/17 14:03	02/01/17 18:19	1
Nickel	ND	QP	10	5.0	ug/L		01/31/17 14:03	02/01/17 18:19	1
Vanadium	ND	QP	10	5.0	ug/L		01/31/17 14:03	02/01/17 18:19	1
Zinc	ND	QP	20	10	ug/L		01/31/17 14:03	02/01/17 18:19	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/31/17 13:56	02/01/17 20:10	1
Copper	2.6	QP	2.0	0.50	ug/L		01/31/17 13:56	02/01/17 20:10	1
Lead	ND	QP	1.0	0.50	ug/L		01/31/17 13:56	02/01/17 20:10	1
Antimony	ND	QP	2.0	0.50	ug/L		01/31/17 13:56	02/01/17 20:10	1
Selenium	ND	QP	2.0	0.50	ug/L		01/31/17 13:56	02/04/17 16:50	1
Thallium	ND	QP	1.0	0.50	ug/L		01/31/17 13:56	02/01/17 20:10	1
Silver	ND	QP	1.0	0.50	ug/L		01/31/17 13:56	02/01/17 20:10	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	LQ QP	0.20	0.10	ug/L		01/31/17 14:33	02/01/17 16:00	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	34		0.33	0.17	mg/L			02/02/17 13:27	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
Asbestos 100.2	EPA 100.2 Asbestos in Drinking Water	NONE	LA Testing
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			950 mL	1 mL	383672	01/22/17 08:31	FTD	TAL IRV
Total/NA	Analysis	525.2		1			384015	01/24/17 19:44	MF	TAL IRV
Total/NA	Prep	625			915 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		5			385461	01/31/17 21:38	DF	TAL IRV
Total/NA	Prep	608			960 mL	2 mL	383738	01/23/17 07:27	L2A	TAL IRV
Total/NA	Analysis	608 PCB LL		1			384014	01/24/17 23:50	JM	TAL IRV
Total/NA	Prep	608			960 mL	2 mL	383738	01/23/17 07:27	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			383608	01/23/17 21:13	KS	TAL IRV
Total/NA	Analysis	218.6		1			383776	01/23/17 12:56	MN	TAL IRV
Total/NA	Analysis	300.0		1			383773	01/23/17 13:19	NTN	TAL IRV
Total/NA	Analysis	300.0		1			383774	01/23/17 13:19	NTN	TAL IRV
Total/NA	Analysis	314.0		1			383992	01/24/17 11:47	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385505	01/31/17 13:32	NN	TAL IRV
Total/NA	Prep	1613B			1059 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 10:34	SMA	TAL SAC
Total/NA	Prep	1613B	RA		1059 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 18:27	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	384923	01/27/17 14:58	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			385783	02/01/17 12:21	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	384924	01/27/17 14:59	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			385906	02/01/17 18:15	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384111	01/24/17 14:19	DB	TAL IRV
Total/NA	Analysis	245.1		1			384220	01/24/17 22:10	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			386100	02/02/17 13:27	A1S	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384518	01/26/17 08:21	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	384739	01/26/17 19:56	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	383875	01/23/17 14:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384201	01/24/17 19:17	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	384964	01/27/17 14:06	EN	TAL IRV

Client Sample ID: Outfall008_20170121_Comp_F

Lab Sample ID: 440-174236-2

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385514	01/31/17 14:03	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			385871	02/01/17 18:19	K1E	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385511	01/31/17 13:56	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			385889	02/01/17 20:10	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385511	01/31/17 13:56	Q1N	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Client Sample ID: Outfall008_20170121_Comp_F

Lab Sample ID: 440-174236-2

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	200.8		1			386568	02/04/17 16:50	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	385533	01/31/17 14:33	DB	TAL IRV
Dissolved	Analysis	245.1		1			385844	02/01/17 16:00	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			386100	02/02/17 13:27	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383672/1-A
Matrix: Water
Analysis Batch: 384015

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383672

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		01/22/17 07:05	01/24/17 16:30	1
Diazinon	ND		0.25	0.12	ug/L		01/22/17 07:05	01/24/17 16:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	98		70 - 130	01/22/17 07:05	01/24/17 16:30	1
Perylene-d12	96		70 - 130	01/22/17 07:05	01/24/17 16:30	1
Triphenylphosphate	111		70 - 130	01/22/17 07:05	01/24/17 16:30	1

Lab Sample ID: LCS 440-383672/2-A
Matrix: Water
Analysis Batch: 384015

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383672

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	4.98		ug/L		100	70 - 130
Diazinon	5.00	4.41		ug/L		88	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	96		70 - 130
Perylene-d12	92		70 - 130
Triphenylphosphate	112		70 - 130

Lab Sample ID: LCSD 440-383672/3-A
Matrix: Water
Analysis Batch: 384015

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383672

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	4.99		ug/L		100	70 - 130	0	30
Diazinon	5.00	3.83		ug/L		77	70 - 130	14	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	96		70 - 130
Perylene-d12	93		70 - 130
Triphenylphosphate	113		70 - 130

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Anthracene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Benzidine	ND		10.0	5.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/31/17 11:36	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Chrysene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/31/17 11:36	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/25/17 13:07	01/31/17 11:36	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Fluoranthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Fluorene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Isophorone	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Naphthalene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
Phenanthrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1
Phenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Pyrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/31/17 11:36	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/31/17 11:36	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/31/17 11:36	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		50 - 120	01/25/17 13:07	01/31/17 11:36	1
2-Fluorophenol	58		30 - 120	01/25/17 13:07	01/31/17 11:36	1
2,4,6-Tribromophenol	58		40 - 120	01/25/17 13:07	01/31/17 11:36	1
Nitrobenzene-d5	70		45 - 120	01/25/17 13:07	01/31/17 11:36	1
Terphenyl-d14	87		37 - 144	01/25/17 13:07	01/31/17 11:36	1
Phenol-d6	54		35 - 120	01/25/17 13:07	01/31/17 11:36	1

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	8.665		ug/L		87	47 - 145
Acenaphthylene	10.0	8.940		ug/L		89	33 - 145
Anthracene	10.0	9.000		ug/L		90	27 - 133
Benzidine	10.0	6.553	J,DX	ug/L		66	5 - 66
Benzo[a]anthracene	10.0	9.444		ug/L		94	33 - 143
Benzo[b]fluoranthene	10.0	10.30		ug/L		103	24 - 150
Benzo[k]fluoranthene	10.0	9.941		ug/L		99	11 - 150
Benzo[a]pyrene	10.0	9.575		ug/L		96	17 - 150
Bis(2-chloroethoxy)methane	10.0	8.508		ug/L		85	33 - 150
Bis(2-chloroethyl)ether	10.0	7.950		ug/L		79	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	9.873		ug/L		99	10 - 150
4-Bromophenyl phenyl ether	10.0	8.907		ug/L		89	53 - 127
Butyl benzyl phthalate	10.0	9.915		ug/L		99	10 - 150
4-Chloro-3-methylphenol	10.0	8.893		ug/L		89	22 - 147
2-Chloronaphthalene	10.0	8.468		ug/L		85	60 - 118
2-Chlorophenol	10.0	7.787		ug/L		78	23 - 134
4-Chlorophenyl phenyl ether	10.0	9.024		ug/L		90	25 - 150
Chrysene	10.0	9.339		ug/L		93	17 - 150
Dibenz(a,h)anthracene	10.0	11.29		ug/L		113	10 - 150
Di-n-butyl phthalate	10.0	9.433		ug/L		94	10 - 118
1,2-Dichlorobenzene	10.0	7.362		ug/L		74	32 - 129
1,3-Dichlorobenzene	10.0	7.094		ug/L		71	10 - 150
1,4-Dichlorobenzene	10.0	7.120		ug/L		71	20 - 124
3,3'-Dichlorobenzidine	10.0	7.949		ug/L		79	10 - 150
2,4-Dichlorophenol	10.0	8.532		ug/L		85	39 - 135
Diethyl phthalate	10.0	9.361		ug/L		94	10 - 114
2,4-Dimethylphenol	10.0	6.686		ug/L		67	32 - 119
Dimethyl phthalate	10.0	9.236		ug/L		92	10 - 112
4,6-Dinitro-2-methylphenol	20.0	18.00		ug/L		90	10 - 150
2,4-Dinitrophenol	20.0	19.52		ug/L		98	50 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4-Dinitrotoluene	10.0	9.292		ug/L		93	39 - 139
2,6-Dinitrotoluene	10.0	9.149		ug/L		91	50 - 150
Di-n-octyl phthalate	10.0	9.835		ug/L		98	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	8.923		ug/L		88	47 - 116
Fluoranthene	10.0	9.301		ug/L		93	26 - 137
Fluorene	10.0	8.993		ug/L		90	59 - 121
Hexachlorobenzene	10.0	8.835		ug/L		88	10 - 150
Hexachlorobutadiene	10.0	7.053		ug/L		71	24 - 116
Hexachloroethane	10.0	6.818		ug/L		68	40 - 113
Hexachlorocyclopentadiene	10.0	3.286	J,DX	ug/L		33	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	11.62		ug/L		116	10 - 150
Isophorone	10.0	8.930		ug/L		89	21 - 150
Naphthalene	10.0	7.903		ug/L		79	21 - 133
Nitrobenzene	10.0	8.282		ug/L		83	35 - 150
2-Nitrophenol	10.0	8.522		ug/L		85	29 - 150
4-Nitrophenol	20.0	19.02		ug/L		95	10 - 132
N-Nitrosodimethylamine	10.0	8.430		ug/L		84	26 - 117
N-Nitrosodiphenylamine	10.0	7.880		ug/L		79	54 - 110
N-Nitrosodi-n-propylamine	10.0	8.640		ug/L		86	10 - 150
Pentachlorophenol	20.0	17.52		ug/L		88	14 - 150
Phenanthrene	10.0	8.824		ug/L		88	54 - 120
Phenol	10.0	8.010		ug/L		80	10 - 112
Pyrene	10.0	9.170		ug/L		92	52 - 115
1,2,4-Trichlorobenzene	10.0	7.439		ug/L		74	44 - 142
2,4,6-Trichlorophenol	10.0	8.769		ug/L		88	37 - 144
Benzo[g,h,i]perylene	10.0	11.72		ug/L		117	10 - 150
bis (2-chloroisopropyl) ether	10.0	8.221		ug/L		82	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	86		50 - 120
2-Fluorophenol	73		30 - 120
2,4,6-Tribromophenol	92		40 - 120
Nitrobenzene-d5	82		45 - 120
Terphenyl-d14	96		37 - 144
Phenol-d6	82		35 - 120

Lab Sample ID: 440-174317-R-1-C MS
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	ND		10.0	6.411		ug/L		64	47 - 145
Acenaphthylene	ND		10.0	6.499		ug/L		65	33 - 145
Anthracene	ND		10.0	5.852		ug/L		59	27 - 133
Benzidine	ND		10.0	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		10.0	6.804		ug/L		68	33 - 143
Benzo[b]fluoranthene	ND		10.0	7.143		ug/L		71	24 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-R-1-C MS

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier	Added	Result	Qualifier				
Benzo[k]fluoranthene	ND		10.0	7.292		ug/L		73	11 - 150
Benzo[a]pyrene	ND		10.0	6.733		ug/L		67	17 - 150
Bis(2-chloroethoxy)methane	ND		10.0	6.297		ug/L		63	33 - 150
Bis(2-chloroethyl)ether	ND		10.0	6.041		ug/L		60	12 - 150
Bis(2-ethylhexyl) phthalate	ND		10.0	7.512		ug/L		75	10 - 150
4-Bromophenyl phenyl ether	ND		10.0	6.502		ug/L		65	53 - 127
Butyl benzyl phthalate	ND		10.0	7.324		ug/L		73	10 - 150
4-Chloro-3-methylphenol	ND		10.0	6.716		ug/L		67	22 - 147
2-Chloronaphthalene	ND		10.0	6.395		ug/L		64	60 - 118
2-Chlorophenol	ND		10.0	5.534		ug/L		55	23 - 134
4-Chlorophenyl phenyl ether	ND		10.0	6.650		ug/L		67	25 - 150
Chrysene	ND		10.0	6.680		ug/L		67	17 - 150
Dibenz(a,h)anthracene	ND		10.0	6.753		ug/L		68	10 - 150
Di-n-butyl phthalate	ND		10.0	7.048		ug/L		70	10 - 118
1,2-Dichlorobenzene	ND		10.0	5.798		ug/L		58	32 - 129
1,3-Dichlorobenzene	ND		10.0	5.573		ug/L		56	10 - 150
1,4-Dichlorobenzene	ND		10.0	5.490		ug/L		55	20 - 124
3,3'-Dichlorobenzidine	ND		10.0	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		10.0	6.136		ug/L		61	39 - 135
Diethyl phthalate	ND		10.0	7.036		ug/L		70	10 - 114
2,4-Dimethylphenol	ND		10.0	6.167		ug/L		62	32 - 119
Dimethyl phthalate	ND		10.0	6.984		ug/L		70	10 - 112
4,6-Dinitro-2-methylphenol	ND		20.0	14.22		ug/L		71	10 - 150
2,4-Dinitrophenol	ND		20.0	16.82		ug/L		84	50 - 150
2,4-Dinitrotoluene	ND		10.0	7.212		ug/L		72	39 - 139
2,6-Dinitrotoluene	ND		10.0	7.098		ug/L		71	50 - 150
Di-n-octyl phthalate	ND		10.0	7.397		ug/L		74	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.1	6.080		ug/L		60	60 - 120
Fluoranthene	ND		10.0	6.910		ug/L		69	26 - 137
Fluorene	ND		10.0	6.836		ug/L		68	59 - 121
Hexachlorobenzene	ND		10.0	6.284		ug/L		63	10 - 150
Hexachlorobutadiene	ND		10.0	5.455		ug/L		55	24 - 116
Hexachloroethane	ND		10.0	5.336		ug/L		53	40 - 113
Hexachlorocyclopentadiene	ND		10.0	3.960	J,DX	ug/L		40	25 - 120
Indeno[1,2,3-cd]pyrene	ND		10.0	6.725		ug/L		67	10 - 150
Isophorone	ND		10.0	6.778		ug/L		68	21 - 150
Naphthalene	ND		10.0	6.053		ug/L		61	21 - 133
Nitrobenzene	ND		10.0	6.728		ug/L		67	35 - 150
2-Nitrophenol	ND		10.0	6.457		ug/L		65	29 - 150
4-Nitrophenol	ND		20.0	13.83		ug/L		69	10 - 132
N-Nitrosodimethylamine	ND		10.0	6.322		ug/L		63	12 - 123
N-Nitrosodiphenylamine	ND		10.0	5.120	LN	ug/L		51	60 - 120
N-Nitrosodi-n-propylamine	ND		10.0	6.496		ug/L		65	10 - 150
Pentachlorophenol	ND		20.0	14.96		ug/L		75	14 - 150
Phenanthrene	ND		10.0	6.385		ug/L		64	54 - 120
Phenol	ND		10.0	5.425		ug/L		54	10 - 112
Pyrene	ND		10.0	6.688		ug/L		67	52 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-R-1-C MS

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
1,2,4-Trichlorobenzene	ND		10.0	5.897		ug/L		59	44 - 142
2,4,6-Trichlorophenol	ND		10.0	6.506		ug/L		65	37 - 144
Benzo[g,h,i]perylene	ND		10.0	6.221		ug/L		62	10 - 150
bis (2-chloroisopropyl) ether	ND		10.0	6.309		ug/L		63	45 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	50		30 - 120
2,4,6-Tribromophenol	69		40 - 120
Nitrobenzene-d5	63		45 - 120
Terphenyl-d14	68		37 - 144
Phenol-d6	55		35 - 120

Lab Sample ID: 440-174317-S-1-A MSD

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	ND		10.1	7.982		ug/L		79	47 - 145	22	25
Acenaphthylene	ND		10.1	7.696		ug/L		77	33 - 145	17	25
Anthracene	ND		10.1	7.392		ug/L		74	27 - 133	23	25
Benzidine	ND		10.1	ND	LN	ug/L		0	30 - 160	NC	35
Benzo[a]anthracene	ND		10.1	8.507	BA	ug/L		85	33 - 143	22	20
Benzo[b]fluoranthene	ND		10.1	9.812	BA	ug/L		98	24 - 150	31	25
Benzo[k]fluoranthene	ND		10.1	9.596		ug/L		95	11 - 150	27	30
Benzo[a]pyrene	ND		10.1	8.179		ug/L		81	17 - 150	19	25
Bis(2-chloroethoxy)methane	ND		10.1	5.605		ug/L		56	33 - 150	12	25
Bis(2-chloroethyl)ether	ND		10.1	7.701		ug/L		77	12 - 150	24	25
Bis(2-ethylhexyl) phthalate	ND		10.1	9.176		ug/L		91	10 - 150	20	25
4-Bromophenyl phenyl ether	ND		10.1	8.537	BA	ug/L		85	53 - 127	27	25
Butyl benzyl phthalate	ND		10.1	9.304		ug/L		93	10 - 150	24	25
4-Chloro-3-methylphenol	ND		10.1	8.781	BA	ug/L		87	22 - 147	27	25
2-Chloronaphthalene	ND		10.1	8.154	BA	ug/L		81	60 - 118	24	20
2-Chlorophenol	ND		10.1	7.733	BA	ug/L		77	23 - 134	33	25
4-Chlorophenyl phenyl ether	ND		10.1	8.199		ug/L		82	25 - 150	21	25
Chrysene	ND		10.1	8.702	BA	ug/L		87	17 - 150	26	25
Dibenz(a,h)anthracene	ND		10.1	8.588		ug/L		85	10 - 150	24	30
Di-n-butyl phthalate	ND		10.1	9.047		ug/L		90	10 - 118	25	25
1,2-Dichlorobenzene	ND		10.1	7.274		ug/L		72	32 - 129	23	25
1,3-Dichlorobenzene	ND		10.1	6.931		ug/L		69	10 - 150	22	25
1,4-Dichlorobenzene	ND		10.1	6.828		ug/L		68	20 - 124	22	25
3,3'-Dichlorobenzidine	ND		10.1	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		10.1	8.157	BA	ug/L		81	39 - 135	28	25
Diethyl phthalate	ND		10.1	8.969		ug/L		89	10 - 114	24	30
2,4-Dimethylphenol	ND		10.1	8.272	BA	ug/L		82	32 - 119	29	25
Dimethyl phthalate	ND		10.1	8.759		ug/L		87	10 - 112	23	30
4,6-Dinitro-2-methylphenol	ND		20.1	19.25	BA	ug/L		96	10 - 150	30	25
2,4-Dinitrophenol	ND		20.1	22.87	BA	ug/L		114	50 - 150	30	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-S-1-A MSD
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
2,4-Dinitrotoluene	ND		10.1	9.019		ug/L		90	39 - 139	22	25
2,6-Dinitrotoluene	ND		10.1	9.052	BA	ug/L		90	50 - 150	24	20
Di-n-octyl phthalate	ND		10.1	9.209	BA	ug/L		92	10 - 146	22	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.2	1.979	LN BA	ug/L		19	60 - 120	102	25
Fluoranthene	ND		10.1	9.140	BA	ug/L		91	26 - 137	28	25
Fluorene	ND		10.1	8.504		ug/L		85	59 - 121	22	25
Hexachlorobenzene	ND		10.1	8.282	BA	ug/L		82	10 - 150	27	25
Hexachlorobutadiene	ND		10.1	6.862		ug/L		68	24 - 116	23	25
Hexachloroethane	ND		10.1	6.786		ug/L		68	40 - 113	24	25
Hexachlorocyclopentadiene	ND		10.1	5.165		ug/L		51	25 - 120	26	30
Indeno[1,2,3-cd]pyrene	ND		10.1	8.446		ug/L		84	10 - 150	23	30
Isophorone	ND		10.1	8.771	BA	ug/L		87	21 - 150	26	25
Naphthalene	ND		10.1	7.689		ug/L		77	21 - 133	24	25
Nitrobenzene	ND		10.1	9.123	BA	ug/L		91	35 - 150	30	25
2-Nitrophenol	ND		10.1	9.215	BA	ug/L		92	29 - 150	35	25
4-Nitrophenol	ND		20.1	18.16		ug/L		90	10 - 132	27	30
N-Nitrosodimethylamine	ND		10.1	7.495		ug/L		75	12 - 123	17	35
N-Nitrosodiphenylamine	ND		10.1	3.065	LN BA	ug/L		30	60 - 120	50	25
N-Nitrosodi-n-propylamine	ND		10.1	8.244		ug/L		82	10 - 150	24	25
Pentachlorophenol	ND		20.1	20.41	BA	ug/L		102	14 - 150	31	25
Phenanthrene	ND		10.1	8.537	BA	ug/L		85	54 - 120	29	25
Phenol	ND		10.1	7.404	BA	ug/L		74	10 - 112	31	25
Pyrene	ND		10.1	8.488		ug/L		84	52 - 115	24	25
1,2,4-Trichlorobenzene	ND		10.1	7.201		ug/L		72	44 - 142	20	20
2,4,6-Trichlorophenol	ND		10.1	8.757		ug/L		87	37 - 144	29	30
Benzo[g,h,i]perylene	ND		10.1	7.884		ug/L		78	10 - 150	24	30
bis (2-chloroisopropyl) ether	ND		10.1	7.755		ug/L		77	45 - 120	21	25

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	79		50 - 120
2-Fluorophenol	72		30 - 120
2,4,6-Tribromophenol	95		40 - 120
Nitrobenzene-d5	80		45 - 120
Terphenyl-d14	87		37 - 144
Phenol-d6	76		35 - 120

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-383738/1-A
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383738

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor 1016	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: MB 440-383738/1-A
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383738

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor 1248	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/23/17 07:27	01/24/17 20:30	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
DCB Decachlorobiphenyl (Surr)	50		29 - 115	01/23/17 07:27	01/24/17 20:30	1

Lab Sample ID: LCS 440-383738/5-A
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	4.00	2.67		ug/L		67	50 - 115
Aroclor 1260	4.00	2.52		ug/L		63	10 - 127

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	64		29 - 115

Lab Sample ID: 440-174234-D-1-B MS
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	ND		4.02	2.76		ug/L		69	45 - 120
Aroclor 1260	ND		4.02	2.71		ug/L		67	55 - 125

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	33		29 - 115

Lab Sample ID: 440-174234-F-1-A MSD
Matrix: Water
Analysis Batch: 384014

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	
										RPD	Limit
Aroclor 1016	ND		4.15	3.00		ug/L		72	45 - 120	8	30
Aroclor 1260	ND		4.15	2.84		ug/L		69	55 - 125	5	25

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
DCB Decachlorobiphenyl (Surr)	35		29 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-383738/1-A
Matrix: Water
Analysis Batch: 383608

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383738

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		01/23/17 07:27	01/23/17 18:13	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/23/17 07:27	01/23/17 18:13	1
beta-BHC	ND		0.010	0.0040	ug/L		01/23/17 07:27	01/23/17 18:13	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/23/17 07:27	01/23/17 18:13	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/23/17 07:27	01/23/17 18:13	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endrin	ND		0.0050	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/23/17 07:27	01/23/17 18:13	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Heptachlor	ND		0.010	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/23/17 07:27	01/23/17 18:13	1
Toxaphene	ND		0.50	0.25	ug/L		01/23/17 07:27	01/23/17 18:13	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/23/17 07:27	01/23/17 18:13	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/23/17 07:27	01/23/17 18:13	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/23/17 07:27	01/23/17 18:13	1
		MB MB							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	76		10 - 150				01/23/17 07:27	01/23/17 18:13	1

Lab Sample ID: LCS 440-383738/2-A
Matrix: Water
Analysis Batch: 383608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383738

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.200	0.125		ug/L		63	42 - 122
alpha-BHC	0.200	0.141		ug/L		70	37 - 134
beta-BHC	0.200	0.130		ug/L		65	17 - 147
delta-BHC	0.200	0.140		ug/L		70	19 - 140
Dieldrin	0.200	0.148		ug/L		74	36 - 146
Endosulfan I	0.200	0.141		ug/L		71	45 - 150
Endosulfan II	0.200	0.149		ug/L		75	10 - 150
Endosulfan sulfate	0.200	0.151		ug/L		76	26 - 144
Endrin	0.200	0.139		ug/L		70	30 - 147
Endrin aldehyde	0.200	0.141		ug/L		71	47 - 115
gamma-BHC (Lindane)	0.200	0.144		ug/L		72	32 - 127
Heptachlor	0.200	0.137		ug/L		68	34 - 115
Heptachlor epoxide	0.200	0.147		ug/L		74	37 - 142
4,4'-DDD	0.200	0.147		ug/L		73	31 - 141
4,4'-DDE	0.200	0.143		ug/L		72	30 - 145
4,4'-DDT	0.200	0.139		ug/L		69	25 - 150
		LCS LCS					
Surrogate	%Recovery	Qualifier	Limits				
Tetrachloro-m-xylene	70		10 - 150				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-174234-D-1-A MSD

Matrix: Water

Analysis Batch: 383608

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 383738

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier								
Aldrin	ND		0.205	0.130		ug/L		63		35 - 120	14		30
alpha-BHC	ND		0.205	0.131		ug/L		64		40 - 120	NC		30
beta-BHC	ND		0.205	0.121		ug/L		59		50 - 120	15		30
delta-BHC	ND		0.205	0.137		ug/L		67		50 - 120	19		30
Dieldrin	ND		0.205	0.144		ug/L		70		50 - 120	4		30
Endosulfan I	ND		0.205	0.126		ug/L		62		50 - 120	NC		30
Endosulfan II	ND		0.205	0.136		ug/L		66		50 - 125	3		30
Endosulfan sulfate	ND		0.205	0.134		ug/L		65		55 - 125	NC		30
Endrin	ND		0.205	0.135		ug/L		66		50 - 120	NC		30
Endrin aldehyde	ND		0.205	0.128		ug/L		62		45 - 125	1		30
gamma-BHC (Lindane)	ND		0.205	0.134		ug/L		65		40 - 120	NC		30
Heptachlor	ND		0.205	0.131		ug/L		64		40 - 120	17		30
Heptachlor epoxide	ND		0.205	0.138		ug/L		67		50 - 120	13		30
4,4'-DDD	ND		0.205	0.139		ug/L		68		50 - 125	3		30
4,4'-DDE	ND		0.205	0.131		ug/L		64		45 - 125	10		30
4,4'-DDT	ND		0.205	0.127		ug/L		62		50 - 125	NC		30

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	65		10 - 150

Lab Sample ID: 440-174234-E-1-A MS

Matrix: Water

Analysis Batch: 383608

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 383738

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Aldrin	ND		0.202	0.149		ug/L		74		35 - 120
beta-BHC	ND		0.202	0.140		ug/L		69		50 - 120
delta-BHC	ND		0.202	0.166		ug/L		82		50 - 120
Dieldrin	ND		0.202	0.150		ug/L		74		50 - 120
Endosulfan II	ND		0.202	0.140		ug/L		69		50 - 125
Endrin aldehyde	ND		0.202	0.129		ug/L		64		45 - 125
Heptachlor	ND		0.202	0.156		ug/L		77		40 - 120
Heptachlor epoxide	ND		0.202	0.156		ug/L		77		50 - 120
4,4'-DDD	ND		0.202	0.143		ug/L		71		50 - 125
4,4'-DDE	ND		0.202	0.145		ug/L		72		45 - 125

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	69		10 - 150

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-383776/3

Matrix: Water

Analysis Batch: 383776

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chromium, hexavalent	ND	IB	1.0	0.25	ug/L			01/23/17 09:50	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: LCS 440-383776/2
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	52.4		ug/L		105	90 - 110

Lab Sample ID: MRL 440-383776/4
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.26		ug/L		126	50 - 150

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND	IB	50.0	53.6	IB	ug/L		107	90 - 110

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383776

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	ND	IB	50.0	53.9	IB	ug/L		108	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383773/4
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			01/23/17 10:09	1
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383773/2
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.16		mg/L		103	90 - 110
Nitrite as N	1.52	1.52		mg/L		100	90 - 110

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.4		1.13	2.43		mg/L		91	80 - 120
Nitrite as N	ND		1.52	1.33		mg/L		88	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383773

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.4		1.13	2.63		mg/L		109	80 - 120	8	20
Nitrite as N	ND		1.52	1.60		mg/L		105	80 - 120	18	20

Lab Sample ID: MB 440-383774/4
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 10:09	1
Fluoride	ND		0.50	0.25	mg/L			01/23/17 10:09	1
Sulfate	ND		0.50	0.25	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383774/2
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.82		mg/L		96	90 - 110
Fluoride	5.00	4.61		mg/L		92	90 - 110
Sulfate	5.00	5.07		mg/L		101	90 - 110

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.8		5.00	8.08		mg/L		86	80 - 120
Fluoride	ND		5.00	3.96	LN	mg/L		79	80 - 120
Sulfate	3.3		5.00	7.55		mg/L		85	80 - 120

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.8		5.00	8.95		mg/L		104	80 - 120	10	20
Fluoride	ND		5.00	4.84		mg/L		97	80 - 120	20	20
Sulfate	3.3		5.00	8.52		mg/L		104	80 - 120	12	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-383992/3
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 09:02	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: LCS 440-383992/2
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.2		ug/L		101	85 - 115

Lab Sample ID: MRL 440-383992/5
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.22		ug/L		105	75 - 125

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	30.7	LM	ug/L		123	80 - 120

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383992

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	31.0	LM	ug/L		124	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.00000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDD	0.00000700	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-384923/1-A
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	50	ug/L		01/27/17 14:58	02/01/17 12:17	1
Arsenic	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Boron	ND		0.050	0.025	mg/L		01/27/17 14:58	02/01/17 12:17	1
Beryllium	ND		2.0	1.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Chromium	ND		5.0	2.5	ug/L		01/27/17 14:58	02/01/17 12:17	1
Iron	ND		0.10	0.050	mg/L		01/27/17 14:58	02/01/17 12:17	1
Nickel	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Vanadium	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: MB 440-384923/1-A
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		01/27/17 14:58	02/01/17 12:17	1

Lab Sample ID: LCS 440-384923/2-A
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aluminum	500	460		ug/L		92	85 - 115
Arsenic	500	489		ug/L		98	85 - 115
Boron	0.500	0.465		mg/L		93	85 - 115
Beryllium	500	478		ug/L		96	85 - 115
Calcium	2.50	2.43		mg/L		97	85 - 115
Chromium	500	505		ug/L		101	85 - 115
Iron	0.500	0.487		mg/L		97	85 - 115
Magnesium	2.50	2.42		mg/L		97	85 - 115
Nickel	500	485		ug/L		97	85 - 115
Vanadium	500	477		ug/L		95	85 - 115
Zinc	500	474		ug/L		95	85 - 115
Silver	250	225		ug/L		90	85 - 115

Lab Sample ID: 440-174236-1 MS
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Outfall008_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aluminum	4900		500	10400	BB	ug/L		1104	70 - 130
Arsenic	5.4	J,DX	500	494		ug/L		98	70 - 130
Boron	0.070		0.500	0.534		mg/L		93	70 - 130
Beryllium	ND		500	493		ug/L		99	70 - 130
Calcium	13		2.50	14.9	BB	mg/L		80	70 - 130
Chromium	6.7		500	513		ug/L		101	70 - 130
Iron	6.8		0.500	8.05	BB	mg/L		250	70 - 130
Magnesium	3.8		2.50	6.45		mg/L		105	70 - 130
Nickel	ND		500	514		ug/L		103	70 - 130
Vanadium	13		500	500		ug/L		97	70 - 130
Zinc	29		500	502		ug/L		95	70 - 130
Silver	ND		250	227		ug/L		91	70 - 130

Lab Sample ID: 440-174236-1 MSD
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Outfall008_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aluminum	4900		500	9610	BB	ug/L		951	70 - 130	8	20
Arsenic	5.4	J,DX	500	488		ug/L		96	70 - 130	1	20
Boron	0.070		0.500	0.533		mg/L		93	70 - 130	0	20
Beryllium	ND		500	485		ug/L		97	70 - 130	2	20
Calcium	13		2.50	15.4	BB	mg/L		100	70 - 130	3	20
Chromium	6.7		500	511		ug/L		101	70 - 130	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174236-1 MSD
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Outfall008_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Iron	6.8		0.500	7.57	BB	mg/L		154	70 - 130	6	20
Magnesium	3.8		2.50	6.35		mg/L		100	70 - 130	2	20
Nickel	ND		500	483		ug/L		97	70 - 130	6	20
Vanadium	13		500	493		ug/L		96	70 - 130	1	20
Zinc	29		500	496		ug/L		93	70 - 130	1	20
Silver	ND		250	225		ug/L		90	70 - 130	1	20

Lab Sample ID: MB 440-385514/1-A
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385514

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aluminum	ND		100	50	ug/L		01/31/17 14:03	02/01/17 18:14	1
Arsenic	ND		10	5.0	ug/L		01/31/17 14:03	02/01/17 18:14	1
Boron	ND		0.050	0.025	mg/L		01/31/17 14:03	02/01/17 18:14	1
Beryllium	ND		2.0	1.0	ug/L		01/31/17 14:03	02/01/17 18:14	1
Chromium	ND		5.0	2.5	ug/L		01/31/17 14:03	02/01/17 18:14	1
Iron	ND		0.10	0.050	mg/L		01/31/17 14:03	02/01/17 18:14	1
Nickel	ND		10	5.0	ug/L		01/31/17 14:03	02/01/17 18:14	1
Vanadium	ND		10	5.0	ug/L		01/31/17 14:03	02/01/17 18:14	1
Zinc	ND		20	10	ug/L		01/31/17 14:03	02/01/17 18:14	1

Lab Sample ID: LCS 440-385514/2-A
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
Aluminum	500	438		ug/L		88	85 - 115
Arsenic	500	457		ug/L		91	85 - 115
Boron	0.500	0.450		mg/L		90	85 - 115
Beryllium	500	460		ug/L		92	85 - 115
Calcium	2.50	2.27		mg/L		91	85 - 115
Chromium	500	483		ug/L		97	85 - 115
Iron	0.500	0.462		mg/L		92	85 - 115
Magnesium	2.50	2.34		mg/L		94	85 - 115
Nickel	500	486		ug/L		97	85 - 115
Vanadium	500	466		ug/L		93	85 - 115
Zinc	500	456		ug/L		91	85 - 115
Silver	250	220		ug/L		88	85 - 115

Lab Sample ID: 440-174236-2 MS
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Outfall008_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385514

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				Limits
Aluminum	200	QP	500	738		ug/L		108	70 - 130
Arsenic	ND	QP	500	468		ug/L		94	70 - 130
Boron	0.061	QP	0.500	0.516		mg/L		91	70 - 130
Beryllium	ND	QP	500	468		ug/L		94	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174236-2 MS
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Outfall008_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385514

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Calcium	10	QP	2.50	13.2	BB	mg/L		113		70 - 130
Chromium	ND	QP	500	487		ug/L		97		70 - 130
Iron	0.18	QP	0.500	0.682		mg/L		100		70 - 130
Magnesium	2.0	QP	2.50	4.45		mg/L		99		70 - 130
Nickel	ND	QP	500	489		ug/L		98		70 - 130
Vanadium	ND	QP	500	472		ug/L		94		70 - 130
Zinc	ND	QP	500	460		ug/L		92		70 - 130
Silver	ND	QP	250	220		ug/L		88		70 - 130

Lab Sample ID: 440-174236-2 MSD
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Outfall008_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385514

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Aluminum	200	QP	500	728		ug/L		105		70 - 130	1	20
Arsenic	ND	QP	500	460		ug/L		92		70 - 130	2	20
Boron	0.061	QP	0.500	0.514		mg/L		90		70 - 130	0	20
Beryllium	ND	QP	500	462		ug/L		92		70 - 130	1	20
Calcium	10	QP	2.50	12.5	BB	mg/L		87		70 - 130	5	20
Chromium	ND	QP	500	483		ug/L		97		70 - 130	1	20
Iron	0.18	QP	0.500	0.658		mg/L		95		70 - 130	3	20
Magnesium	2.0	QP	2.50	4.39		mg/L		97		70 - 130	1	20
Nickel	ND	QP	500	485		ug/L		97		70 - 130	1	20
Vanadium	ND	QP	500	470		ug/L		94		70 - 130	1	20
Zinc	ND	QP	500	457		ug/L		91		70 - 130	1	20
Silver	ND	QP	250	218		ug/L		87		70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-384924/1-A
Matrix: Water
Analysis Batch: 385906

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384924

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		01/27/17 14:59	02/01/17 18:10	1
Copper	0.783	J,DX	2.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:10	1
Lead	ND		1.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:10	1
Antimony	ND		2.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:10	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:10	1
Thallium	ND		1.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:10	1
Silver	ND		1.0	0.50	ug/L		01/27/17 14:59	02/01/17 18:10	1

Lab Sample ID: LCS 440-384924/2-A
Matrix: Water
Analysis Batch: 385906

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384924

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Added	Result					
Cadmium	80.0	72.8		ug/L		91		85 - 115
Copper	80.0	71.4		ug/L		89		85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-384924/2-A
Matrix: Water
Analysis Batch: 385906

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384924

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	80.0	71.7		ug/L		90	85 - 115
Antimony	80.0	82.8		ug/L		103	85 - 115
Selenium	80.0	74.5		ug/L		93	85 - 115
Thallium	80.0	74.0		ug/L		93	85 - 115
Silver	80.0	72.9		ug/L		91	85 - 115

Lab Sample ID: 440-174236-1 MS
Matrix: Water
Analysis Batch: 385906

Client Sample ID: Outfall008_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384924

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	72.5		ug/L		91	70 - 130
Copper	6.7	MB	80.0	69.4		ug/L		78	70 - 130
Lead	4.0		80.0	74.3		ug/L		88	70 - 130
Antimony	0.65	J,DX	80.0	71.8		ug/L		89	70 - 130
Selenium	ND		80.0	68.4		ug/L		86	70 - 130
Thallium	ND		80.0	23.6	LN	ug/L		30	70 - 130
Silver	ND		80.0	70.5		ug/L		88	70 - 130

Lab Sample ID: 440-174236-1 MSD
Matrix: Water
Analysis Batch: 385906

Client Sample ID: Outfall008_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 384924

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	75.0		ug/L		94	70 - 130	3	20
Copper	6.7	MB	80.0	72.3		ug/L		82	70 - 130	4	20
Lead	4.0		80.0	78.7		ug/L		93	70 - 130	6	20
Antimony	0.65	J,DX	80.0	74.4		ug/L		92	70 - 130	4	20
Selenium	ND		80.0	71.4		ug/L		89	70 - 130	4	20
Thallium	ND		80.0	25.5	LN	ug/L		32	70 - 130	8	20
Silver	ND		80.0	73.2		ug/L		92	70 - 130	4	20

Lab Sample ID: MB 440-385307/1-D
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385511

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/31/17 13:56	02/01/17 19:50	1
Copper	ND		2.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Lead	ND		1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Antimony	ND		2.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Thallium	ND		1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Silver	ND		1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-385307/1-D
Matrix: Water
Analysis Batch: 386568

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385511

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		2.0	0.50	ug/L		01/31/17 13:56	02/04/17 16:33	1

Lab Sample ID: LCS 440-385307/2-D
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	68.7		ug/L		86	85 - 115
Copper	80.0	69.6		ug/L		87	85 - 115
Lead	80.0	69.3		ug/L		87	85 - 115
Antimony	80.0	77.3		ug/L		97	85 - 115
Thallium	80.0	69.6		ug/L		87	85 - 115
Silver	80.0	67.7		ug/L		85	85 - 115

Lab Sample ID: LCS 440-385307/2-D
Matrix: Water
Analysis Batch: 386568

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Selenium	80.0	69.6		ug/L		87	85 - 115

Lab Sample ID: 440-174237-A-2-D MS
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	68.2		ug/L		85	70 - 130
Copper	3.3	QP	80.0	71.3		ug/L		85	70 - 130
Lead	0.50	J,DX QP	80.0	68.6		ug/L		86	70 - 130
Antimony	0.55	J,DX QP	80.0	78.6		ug/L		98	70 - 130
Thallium	ND	QP	80.0	68.5		ug/L		86	70 - 130
Silver	ND	QP	80.0	67.6		ug/L		84	70 - 130

Lab Sample ID: 440-174237-A-2-D MS
Matrix: Water
Analysis Batch: 386568

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Selenium	ND	QP	80.0	72.2		ug/L		90	70 - 130

Lab Sample ID: 440-174237-A-2-E MSD
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	69.5		ug/L		87	70 - 130	2	20
Copper	3.3	QP	80.0	73.3		ug/L		87	70 - 130	3	20
Lead	0.50	J,DX QP	80.0	67.4		ug/L		84	70 - 130	2	20
Antimony	0.55	J,DX QP	80.0	79.5		ug/L		99	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174237-A-2-E MSD
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Thallium	ND	QP	80.0	67.9		ug/L		85	70 - 130	1	20
Silver	ND	QP	80.0	68.4		ug/L		85	70 - 130	1	20

Lab Sample ID: 440-174237-A-2-E MSD
Matrix: Water
Analysis Batch: 386568

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Selenium	ND	QP	80.0	73.6		ug/L		92	70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384111/1-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384111

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:13	1

Lab Sample ID: LCS 440-384111/2-A
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
		Added	Result				Qualifier
Mercury	8.00	8.11		ug/L		101	85 - 115

Lab Sample ID: 440-174317-A-1-B MS
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Mercury	ND		8.00	7.77		ug/L		97	70 - 130	

Lab Sample ID: 440-174317-A-1-C MSD
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Mercury	ND		8.00	7.82		ug/L		98	70 - 130	1	20

Lab Sample ID: MB 440-385307/1-E
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385533

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/31/17 14:33	02/01/17 15:55	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-385307/2-E
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385533

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	9.35	LQ	ug/L		117	85 - 115

Lab Sample ID: 440-174236-2 MS
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Outfall008_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385533

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	LQ QP	8.00	9.29		ug/L		116	70 - 130

Lab Sample ID: 440-174236-2 MSD
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Outfall008_20170121_Comp_F
Prep Type: Dissolved
Prep Batch: 385533

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	LQ QP	8.00	9.40		ug/L		117	70 - 130	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384518/1
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:21	1

Lab Sample ID: LCS 440-384518/2
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	1020		mg/L		102	90 - 110

Lab Sample ID: 440-174110-D-1 DU
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	72		71.0		mg/L		1	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-384739/1
Matrix: Water
Analysis Batch: 384739

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/26/17 19:56	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: LCS 440-384739/2
Matrix: Water
Analysis Batch: 384739

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1060		mg/L		106	85 - 115

Lab Sample ID: 440-174287-B-1 DU
Matrix: Water
Analysis Batch: 384739

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	150		150		mg/L		1	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-383875/1-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383875

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:16	1

Lab Sample ID: LCS 440-383875/2-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.4		ug/L		96	90 - 110

Lab Sample ID: LCSD 440-383875/3-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	93.3		ug/L		93	90 - 110	3	10

Lab Sample ID: 440-174110-D-1-B MS
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	98.3		ug/L		98	70 - 115

Lab Sample ID: 440-174110-D-1-C MSD
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	100		ug/L		100	70 - 115	2	15

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-384964/10
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 13:34	1

Lab Sample ID: LCS 440-384964/11
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.160		mg/L		103	90 - 110

Lab Sample ID: MRL 440-384964/9
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.3150		mg/L		158	10 - 200

Lab Sample ID: 440-174234-AQ-1 MS
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	4.960		mg/L		99	90 - 110

Lab Sample ID: 440-174234-AQ-1 MSD
Matrix: Water
Analysis Batch: 384964

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.040		mg/L		101	90 - 110	2	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

GC/MS Semi VOA

Prep Batch: 383672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	525.2	
MB 440-383672/1-A	Method Blank	Total/NA	Water	525.2	
LCS 440-383672/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCS D 440-383672/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	

Analysis Batch: 384015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	525.2	383672
MB 440-383672/1-A	Method Blank	Total/NA	Water	525.2	383672
LCS 440-383672/2-A	Lab Control Sample	Total/NA	Water	525.2	383672
LCS D 440-383672/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	383672

Prep Batch: 384349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	625	
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 385461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174317-R-1-C MS	Matrix Spike	Total/NA	Water	625	384349
440-174317-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	625	384349

GC Semi VOA

Analysis Batch: 383608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	608 Pesticides	383738
MB 440-383738/1-A	Method Blank	Total/NA	Water	608 Pesticides	383738
LCS 440-383738/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	383738
440-174234-D-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	383738
440-174234-E-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	383738

Prep Batch: 383738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	608	
MB 440-383738/1-A	Method Blank	Total/NA	Water	608	
LCS 440-383738/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-383738/5-A	Lab Control Sample	Total/NA	Water	608	
440-174234-D-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-174234-D-1-B MS	Matrix Spike	Total/NA	Water	608	
440-174234-E-1-A MS	Matrix Spike	Total/NA	Water	608	
440-174234-F-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

GC Semi VOA (Continued)

Analysis Batch: 384014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	608 PCB LL	383738
MB 440-383738/1-A	Method Blank	Total/NA	Water	608 PCB LL	383738
LCS 440-383738/5-A	Lab Control Sample	Total/NA	Water	608 PCB LL	383738
440-174234-D-1-B MS	Matrix Spike	Total/NA	Water	608 PCB LL	383738
440-174234-F-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 PCB LL	383738

HPLC/IC

Analysis Batch: 383773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	300.0	
MB 440-383773/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383773/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 383774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	300.0	
MB 440-383774/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383774/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 383776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	218.6	
MB 440-383776/3	Method Blank	Total/NA	Water	218.6	
LCS 440-383776/2	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-383776/4	Lab Control Sample	Total/NA	Water	218.6	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	218.6	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	218.6	

Analysis Batch: 383992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	314.0	
MB 440-383992/3	Method Blank	Total/NA	Water	314.0	
LCS 440-383992/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-383992/5	Lab Control Sample	Total/NA	Water	314.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 385505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	NO3NO2 Calc	

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	1613B	
440-174236-1 - RA	Outfall008_20170121_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1 - RA	Outfall008_20170121_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384111

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	245.1	
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174317-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-174317-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	245.1	384111
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	384111
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	384111
440-174317-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	384111
440-174317-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	384111

Prep Batch: 384923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-384923/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-384923/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174236-1 MS	Outfall008_20170121_Comp	Total Recoverable	Water	200.2	
440-174236-1 MSD	Outfall008_20170121_Comp	Total Recoverable	Water	200.2	

Prep Batch: 384924

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-384924/1-A	Method Blank	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Metals (Continued)

Prep Batch: 384924 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-384924/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174236-1 MS	Outfall008_20170121_Comp	Total Recoverable	Water	200.2	
440-174236-1 MSD	Outfall008_20170121_Comp	Total Recoverable	Water	200.2	

Filtration Batch: 385307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	FILTRATION	
MB 440-385307/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-385307/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-385307/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174236-2 MS	Outfall008_20170121_Comp_F	Dissolved	Water	FILTRATION	
440-174236-2 MSD	Outfall008_20170121_Comp_F	Dissolved	Water	FILTRATION	
440-174237-A-2-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174237-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 385511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	200.2	385307
MB 440-385307/1-D	Method Blank	Dissolved	Water	200.2	385307
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	200.2	385307
440-174237-A-2-D MS	Matrix Spike	Dissolved	Water	200.2	385307
440-174237-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	385307

Prep Batch: 385514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	200.2	385307
MB 440-385514/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385514/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174236-2 MS	Outfall008_20170121_Comp_F	Dissolved	Water	200.2	385307
440-174236-2 MSD	Outfall008_20170121_Comp_F	Dissolved	Water	200.2	385307

Prep Batch: 385533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	245.1	385307
MB 440-385307/1-E	Method Blank	Dissolved	Water	245.1	385307
LCS 440-385307/2-E	Lab Control Sample	Dissolved	Water	245.1	385307
440-174236-2 MS	Outfall008_20170121_Comp_F	Dissolved	Water	245.1	385307
440-174236-2 MSD	Outfall008_20170121_Comp_F	Dissolved	Water	245.1	385307

Analysis Batch: 385783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384923
MB 440-384923/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	384923
LCS 440-384923/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	384923
440-174236-1 MS	Outfall008_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384923
440-174236-1 MSD	Outfall008_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	384923

Analysis Batch: 385844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	245.1	385533

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Metals (Continued)

Analysis Batch: 385844 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-385307/1-E	Method Blank	Dissolved	Water	245.1	385533
LCS 440-385307/2-E	Lab Control Sample	Dissolved	Water	245.1	385533
440-174236-2 MS	Outfall008_20170121_Comp_F	Dissolved	Water	245.1	385533
440-174236-2 MSD	Outfall008_20170121_Comp_F	Dissolved	Water	245.1	385533

Analysis Batch: 385871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	385514
MB 440-385514/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385514
LCS 440-385514/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385514
440-174236-2 MS	Outfall008_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	385514
440-174236-2 MSD	Outfall008_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	385514

Analysis Batch: 385889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	200.8	385511
MB 440-385307/1-D	Method Blank	Dissolved	Water	200.8	385511
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	200.8	385511
440-174237-A-2-D MS	Matrix Spike	Dissolved	Water	200.8	385511
440-174237-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	385511

Analysis Batch: 385906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total Recoverable	Water	200.8	384924
MB 440-384924/1-A	Method Blank	Total Recoverable	Water	200.8	384924
LCS 440-384924/2-A	Lab Control Sample	Total Recoverable	Water	200.8	384924
440-174236-1 MS	Outfall008_20170121_Comp	Total Recoverable	Water	200.8	384924
440-174236-1 MSD	Outfall008_20170121_Comp	Total Recoverable	Water	200.8	384924

Analysis Batch: 386100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total Recoverable	Water	SM 2340B	
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 386568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-2	Outfall008_20170121_Comp_F	Dissolved	Water	200.8	385511
MB 440-385307/1-D	Method Blank	Dissolved	Water	200.8	385511
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	200.8	385511
440-174237-A-2-D MS	Matrix Spike	Dissolved	Water	200.8	385511
440-174237-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	385511

General Chemistry

Prep Batch: 383875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	Distill/CN	
MB 440-383875/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

General Chemistry (Continued)

Prep Batch: 383875 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 384201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	SM 4500 CN E	383875
MB 440-383875/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	383875

Analysis Batch: 384518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	SM 2540C	
MB 440-384518/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384518/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174110-D-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 384739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	SM 2540D	
MB 440-384739/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-384739/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174287-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 384964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-384964/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-384964/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-384964/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-174234-AQ-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-174234-AQ-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BA	Relative percent difference out of control

HPLC/IC

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
IB	CCV recovery above limit; analyte not detected
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
BU	Analyzed out of holding time
BV	Sample received after holding time expired

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
BB	Sample > 4X spike concentration
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
LQ	LCS/LCSD recovery above method control limits
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



LA Testing

520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com> / pasadenalab@lateesting.com

LA Testing Order ID: 321701536
Customer ID: TEST72
Customer PO:
Project ID:

Attn: Patty Mata
TestAmerica - Irvine, CA
17461 Derian Avenue
Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 260-3297
Collected: 01/20/2017
Received: 01/25/2017
Analyzed: 02/02/2017
Proj: 440-106776.1 / 440-174236-1 / Boeing NPDES SSFL Outfalls / 44009879

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm ²)	Area Analyzed (mm ²)	ASBESTOS				
					Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration	Confidence Limits
Outfall_20170120_Comp 321701536-0001	1/26/2017 02:05 PM	1	1288	0.2640	None Detected	ND	4.90	<4.90	0.00 - 18.00

Due to excessive particulate the analytical sensitivity of 0.2 MFL as required by the method was not reached. Sample ozonated prior to analysis due to lab receipt time exceeding 48hr method hold time.

Analyst(s)
Sherrie Ahmad (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 02/02/2017 11:00:26

Sample collection and containers provided by the client, acceptable bottle blank level is defined as ≤0.01MFL>10µm. ND=None Detected. This report relates only to those items tested. This report may not be reproduced, except in full, without written permission by LA Testing. Samples received in good condition unless otherwise noted.

Samples analyzed by LA Testing South Pasadena, CA CA ELAP 2283



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall008_20170120_Comp (440-174236-1)
DATE RECEIVED: 23 Jan - 17
ABC LAB NO.: TAM0117.183

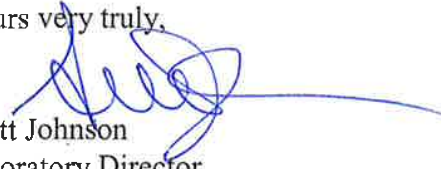
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = FAIL % EFFECT = 41.73 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 02 Feb-17 09:05 (p 1 of 1)
 Test Code: TAM0117.183sel | 06-9367-6763

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-7018-7811	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:21	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-5838-2435	Code: TAM0117.183sel	Client: Test America Irvine
Sample Date: 20 Jan-17 14:21	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 72h (1 °C)	Station: Outfall008_20170120_Comp (440-174236-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
00-0273-2726	Cell Density	TST-Welch's t Test	1.0000	100% failed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
00-0273-2726	Cell Density	Control CV	0.02809	<<	0.2	Yes	Passes Criteria
00-0273-2726	Cell Density	Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.398E+6	1.519E+6	1.458E+4	4.123E+4	2.81%	0.00%
100		8	8.554E+5	8.103E+5	9.004E+5	7.680E+5	9.440E+5	1.905E+4	5.388E+4	6.30%	41.73%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		8.720E+5	8.920E+5	7.680E+5	8.460E+5	8.000E+5	8.620E+5	9.440E+5	8.590E+5

CETIS Analytical Report

Report Date: 02 Feb-17 09:05 (p 1 of 2)
 Test Code: TAM0117.183sel | 06-9367-6763

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	00-0273-2726	Endpoint:	Cell Density	CETIS Version:	CETISv1.9.2
Analyzed:	02 Feb-17 9:05	Analysis:	Parametric Bioequivalence-Two Sample	Official Results:	Yes
Batch ID:	20-7018-7811	Test Type:	Cell Growth	Analyst:	
Start Date:	23 Jan-17 14:21	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	27 Jan-17 12:50	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	94h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	08-5838-2435	Code:	TAM0117.183sel	Client:	Test America Irvine
Sample Date:	20 Jan-17 14:21	Material:	Sample Water	Project:	Boeing NPDES SSFL Outfalls
Receipt Date:	23 Jan-17 11:23	Source:	Bioassay Report		
Sample Age:	72h (1 °C)	Station:	Outfall008_20170120_Comp (440-174236-		

Data Transform	Alt Hyp	TST b	Comparison Result
Untransformed	C*b < T	0.75	100% failed cell density

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100	-11.18	0.6974	11	CDF	1.0000	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02809	<<	0.2	Yes	Passes Criteria
Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.501E+12	1.501E+12	1	652.3	<1.0E-37	Significant Effect
Error	3.222E+10	2.301E+09	14			
Total	1.533E+12		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.08897	8.862	0.7699	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.09586	8.862	0.7614	Equal Variances
Variances	Variance Ratio F Test	1.707	8.885	0.4972	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.2892	3.878	0.6447	Normal Distribution
Distribution	D'Agostino Skewness Test	0.4258	2.576	0.6703	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1562	0.2471	0.3837	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9745	0.8408	0.9052	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.478E+6	1.398E+6	1.519E+6	1.458E+4	2.81%	0.00%
100		8	8.554E+5	8.103E+5	9.004E+5	8.605E+5	7.680E+5	9.440E+5	1.905E+4	6.30%	41.73%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		8.720E+5	8.920E+5	7.680E+5	8.460E+5	8.000E+5	8.620E+5	9.440E+5	8.590E+5

Selenastrum Growth Test

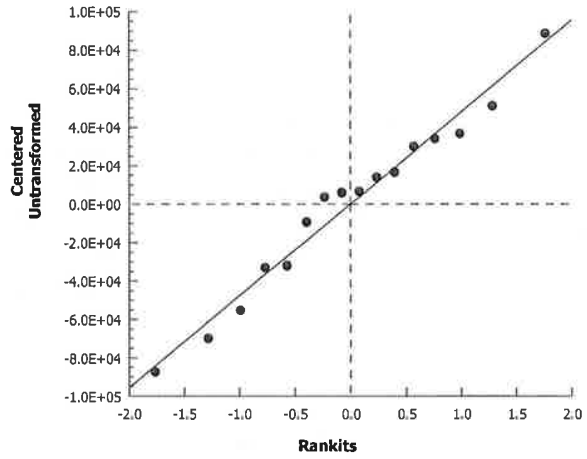
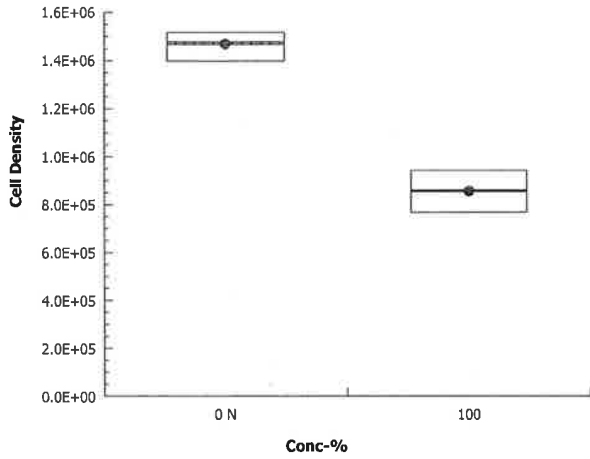
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 00-0273-2726
Analyzed: 02 Feb-17 9:05

Endpoint: Cell Density
Analysis: Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 02 Feb-17 09:05 (p 1 of 2)
 Test Code: TAM0117.183sel | 06-9367-6763

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-7018-7811	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:21	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 12:50	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 08-5838-2435	Code: TAM0117.183sel	Client: Test America Irvine
Sample Date: 20 Jan-17 14:21	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:23	Source: Bioassay Report	
Sample Age: 72h (1 °C)	Station: Outfall008_20170120_Comp (440-174236-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	53			53	53	0	0	0.0%	0
Overall		2	61	-40.65	162.6	53	69	8	11.31	18.55%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	438	451.2	439	452	2.379	5.32	1.2%	0
100		5	206.6	202.7	210.5	202	210	1.4	3.13	1.52%	0
Overall		10	325.6	235.8	415.4	202	452	39.69	125.5	38.55%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	66			66	66	0	0	0.0%	0
Overall		2	81.5	-115.4	278.4	66	97	15.5	21.92	26.90%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.62	7.186	8.054	7.3	8.2	0.1562	0.3493	4.58%	0
Overall		10	7.57	7.388	7.752	7.3	8.2	0.08035	0.2541	3.36%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.16	24.02	24.3	24	24.5	0.06182	0.1955	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 02 Feb-17 09:05 (p 2 of 2)
 Test Code: TAM0117.183sel | 06-9367-6763

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		53

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	447	452	439	440	445
100		202	206	206	209	210

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		66

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.7	7.4	7.4	7.5	7.6
100		8.2	7.4	7.3	7.6	7.6

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.2	24.5	24	24.1	24
100		24.2	24.5	24	24.1	24



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

TestAmerica Irvine
 17481 Derian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Company: Aquatic Bioassay	Address: 29 North Olive Street;	City: Ventura	State, Zip: CA, 93001	Phone: _____	Project Name: Boeing NPDES SSFL outfalls	Site: _____	SSOW#: _____	Due Date Requested: 2/3/2017	TAT Requested (days): _____	Lab Pkg: Pallet: Urnashi	Carrier Tracking No(s): _____	State of Origin: California	COC No: 440-106711-1	Page: Page 1 of 1
<p>Analysis Requested</p> <p>Temp. deg. C = 10 Chlorine (mg/L) = 0 Nit3 (mg/L) = 0</p>																
Sample Identification - Client ID (Lab ID)		Sample ID: Outfall008_20170120_Comp (440-174236-1)	Sample Date: 1/20/17	Sample Time: 14:21 Pacific	Sample Type (C=Comp, G=grab)	Matrix (Metal, Seawater, Overstall, BT=Tissue, Asst)	Field Filtered Sample (Yes or No)	Perfum MS/MSD (Yes or No)	SUB (Chronic-Selenium/ Chronic-Selenium)	Special Instructions/Note: _____	Total Number of containers: 6	Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDTA, M - Hexane, N - None, O - AsNaO2, P - Na2CO3, Q - Na2SO3, R - Na2SO4, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - PH 4.5, Z - other (specify)				
<p>Possible Hazard Identification</p> <p>Deliverable Requested: I, II, III, IV, Other (specify) _____</p>																
<p>Unconfirmed</p> <p>Primary Deliverable Rank: 2</p>																
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <p><input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p>																
<p>Empty Kit/Refr. Pushed by: _____</p> <p>Date/Time: 1-23-17 08:00 Company: TA</p> <p>Relinquished by: _____</p> <p>Date/Time: 1-23-17 11:15 Company: TA</p> <p>Relinquished by: _____</p> <p>Date/Time: _____ Company: _____</p>																
<p>Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Custody Seal No.: _____</p> <p>Cooler Temperature(s) °C and Other Remarks: _____</p>																

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

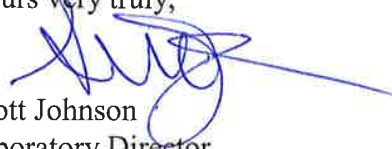
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria	

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:			
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab			
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes **	Below Criteria

ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)	
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect	
Error	3.997E+10	2.220E+09	18				
Total	1.834E+12		23				

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

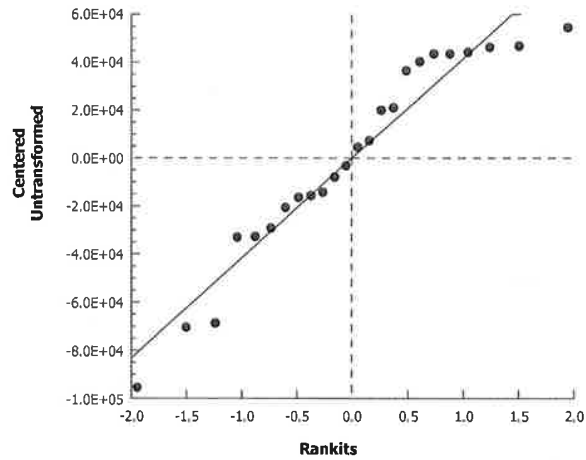
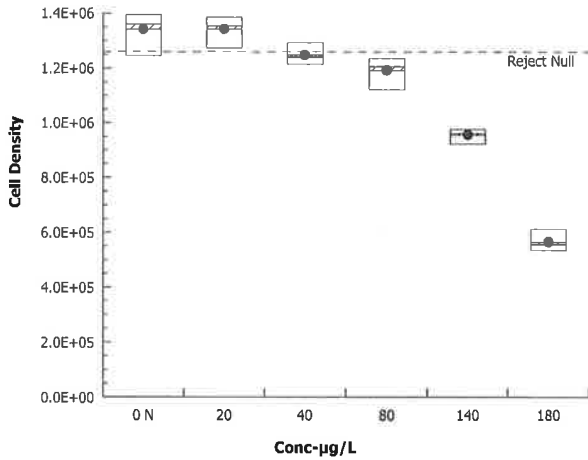
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 14-2916-7122	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 19 Jan-17 16:21	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:	
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab	
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options					
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Point Estimates			
Level	µg/L	95% LCL	95% UCL
IC5	34.35	13.62	61.11
IC10	69.42	18.65	99.03
IC15	93.35	62.81	109.5
IC20	110.4	88.48	124.6
IC25	127.5	108.9	141.2
IC40	155.7	149.9	160.7
IC50	169.5	164.4	175.1

Cell Density Summary			Calculated Variate						
Conc-µg/L	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.0%
20		4	1.341E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.82%	6.92%
80		4	1.192E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail					
Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)

Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



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2017

Test America

CHAIN OF CUSTODY FORMS

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Dertan Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall (008) Outfall 008 Comp</p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 859.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Priority Pollutants - SCOCs (B25) Cr (VI), Total (218.9) Asbestos (100.2) Chlorpyrifos, Diazinon (525.2)</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD			
Outfall 008	Outfall008_20170120_Comp	1/20/2017 14:15	WM	1 L Glass Amber 500 mL Poly	2 1	None	175 260	No No	X		
	Outfall008_20170120_Comp_Etra	1/20/2017 14:15	WM	1 L Glass Amber	2	HCl	275	No	X	Extract within 24-hours of sampling	
			WM	1 L Glass Amber	2	HCl	275	No	X	Hold	
										Hold	
										Store all samples on COC for 6 months	

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 008 for this storm event.
 These must be added to the same work order for COC Page 1 of 3 for Outfall 008 for the same event.

Legend: R = Routine, A = Annual

Relinquished By: <i>BAIS</i>	Date/Time: 1/21/17	Company: <i>Agus</i>	Received By: <i>Wain G. Gagnon</i>	Date/Time: 1/21/17 1800	Company: <i>Wain G. Gagnon</i>
Relinquished By: <i>Kyvin Gagnon</i>	Date/Time: 1/21/17 18:00	Company: <i>Wain G. Gagnon</i>	Received By: <i>Wain G. Gagnon</i>	Date/Time: 1/21/17 4:15	Company: <i>Wain G. Gagnon</i>

Turn-around time: (Check)
 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:
 Sample Integrity: (Check)
 Intact: On Ice:
 Data Requirements: (Check)
 No Level IV: All Level IV:

Handwritten notes:
 1.2/14.1
 3.0/14.1
 2.0/17.4
 1.0/17.7



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



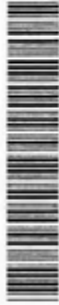
Chain of Custody Record



Client Information (Sub Contract Lab)		Lab Fax: <u> </u>																						
Client Contact: <u> </u>	Phone: <u> </u>	E-Mail: <u> </u>																						
Shipping/Receiving	State of Origin: <u>California</u>																							
Company: <u>TestAmerica Laboratories, Inc.</u>	440-174236 Chain of Custody																							
Address: <u>13715 Rider Trail North,</u>	Page 1 of 1																							
City: <u>Earth City</u>	Job #: <u>440-174236-1</u>																							
State, Zip: <u>MO, 63045</u>	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NitH-SO4 F - MeOH G - Anichlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: <u> </u>																							
Phone: <u>314-298-8566(Tel) 314-298-8757(Fax)</u>	Analysis Requested																							
Email: <u> </u>	<table border="1"> <tr> <th>Analysis Requested</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>905 Divaporation Gross Alpha/Beta</th> <th>901.1 Ca/Fi/Geo. D K-40 and Cesium-137</th> <th>903.0/PreSep. 21 Radium-226</th> <th>904.0/PreSep. 0 Radium-228</th> <th>905.5/90/PreSep. 7 Strontium-90</th> <th>908.0/SEC_Dist_Susp Tritium</th> <th>A07r_U/EX/From_Actin Total Uranium</th> <th>Total Number of Containers</th> </tr> <tr> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> </tr> </table>		Analysis Requested	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	905 Divaporation Gross Alpha/Beta	901.1 Ca/Fi/Geo. D K-40 and Cesium-137	903.0/PreSep. 21 Radium-226	904.0/PreSep. 0 Radium-228	905.5/90/PreSep. 7 Strontium-90	908.0/SEC_Dist_Susp Tritium	A07r_U/EX/From_Actin Total Uranium	Total Number of Containers				X	X	X	X	X	X	X	1
Analysis Requested	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	905 Divaporation Gross Alpha/Beta	901.1 Ca/Fi/Geo. D K-40 and Cesium-137	903.0/PreSep. 21 Radium-226	904.0/PreSep. 0 Radium-228	905.5/90/PreSep. 7 Strontium-90	908.0/SEC_Dist_Susp Tritium	A07r_U/EX/From_Actin Total Uranium	Total Number of Containers														
			X	X	X	X	X	X	X	1														
Due Date Requested: <u>2/2/2017</u>	Special Instructions/Note: Boiling SSFL, DO NOT FILTER, use prep date from preservation																							
TAT Requested (days): <u> </u>	<table border="1"> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (Water, Sealed, Environmental, etc.)</th> <th>Preservation Code:</th> </tr> <tr> <td><u>Outfall006_20170120_Comp (440-174236-1)</u></td> <td><u>1/20/17</u></td> <td><u>14:21 Pacific</u></td> <td></td> <td><u>Water</u></td> <td></td> </tr> </table>		Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Sealed, Environmental, etc.)	Preservation Code:	<u>Outfall006_20170120_Comp (440-174236-1)</u>	<u>1/20/17</u>	<u>14:21 Pacific</u>		<u>Water</u>											
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Project Name: <u>Boeing NPDES SSFL outfalls</u>	<table border="1"> <tr> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (Water, Sealed, Environmental, etc.)</th> <th>Preservation Code:</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Sealed, Environmental, etc.)	Preservation Code:																	
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<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontracted laboratories. This sample shipment is forwarded under client-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analytical/analyte being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>																								
<p>Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) <u> </u> Empty Kit Relinquished by <u> </u> Reacquired by <u> </u> Reacquired by: <u> </u> Reacquired by: <u> </u></p>																								
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <u> </u> Months Special Instructions/OC Requirements: <u> </u></p>																								
<p>Primary Deliverable Rank: 2</p>																								
<p>Time: <u> </u></p>																								
<p>Date: <u> </u></p>																								
<p>Method of Shipment: <u> </u></p>																								
<p>Received by: <u> </u> Company: <u> </u></p>																								
<p>Requested by: <u> </u> Company: <u> </u></p>																								
<p>Received by: <u> </u> Company: <u> </u></p>																								
<p>Cooler Temperature(s) °C and Client Barcode: <u> </u></p>																								
<p>Custody Seals Intact <u> </u> Custody Seal No. <u> </u></p>																								



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab FM: E-Mail: urvashi.patel@testamericainc.com	Carrier Tracking Note(s): State of Origin: California	IOC No: 440-106720.1
Client Contact: Shipping/Receiving		Phone:	Accreditations Required (See note):	Page: Page 1 of 1	Job #: 440-174236-1
Company: TestAmerica Laboratories, Inc.		Due Date Requested: 2/2/2017	Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2S2O3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4.5 L - EDA X - Other (specify) Other:		
Address: 880 Riverside Parkway, West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:		TAT Requested (days):	Analysis Requested:		
Project Name: Boeing NPDES SSFL outfalls Site:		FO #:	Total Number of Containers:		
Project #: 44009879 Site: SSOWR		IVO #:	Special Instructions/Note: See OAS, Boeing_wiu to zero, Use Boeing glassware. See OAS, Boeing_wiu to zero, Use Boeing glassware.		
Sample Identification - Client ID (Lab ID)		Perform MS/MSD (Yes or No)	Field Filtered Sample (Yes or No)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	
Outfall008_20170120_Comp (440-174236-1)	Sample Date: 1/20/17	Sample Time: 14:21 Pacific	Sample Type (C=Comp, G=grab)	Preservation Code: Water	2
Outfall008_20170120_Comp_Extra (440-174236-3)	Sample Date: 1/20/17	Sample Time: 14:21 Pacific	Sample Type (C=Comp, G=grab)	Preservation Code: Water	2
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2					
Empty Kit Relinquished by: Date: 1/23/17 17:00 Time: Company: TAI					
Relinquished by: <i>Van Buren</i> Date/Time: 1/23/17 17:00 Company: TAI					
Relinquished by: <i>John G. Turpan</i> Date/Time: 1/24/17 09:46 Company: TAMS					
Relinquished by: Date/Time: Company:					
Custody Seals Intact: Δ Yes Δ No Custody Seal No.: 1-p.c 70e					
<p>Special Instructions/OC Requirements: <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months <input type="checkbox"/> Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p>					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174236-1

Login Number: 174236

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174236-1

Login Number: 174236

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/25/17 12:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174236-1	Outfall008_20170121_Comp	67	60	73	63	69	76	69	66
440-174236-1 - RA	Outfall008_20170121_Comp		57						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174236-1	Outfall008_20170121_Comp	62	62	62	81	69	77	92	66
440-174236-1 - RA	Outfall008_20170121_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174236-1	Outfall008_20170121_Comp		62		62		62	81	
440-174236-1 - RA	Outfall008_20170121_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174236-1	Outfall008_20170121_Comp		69		77		92
440-174236-1 - RA	Outfall008_20170121_Comp						
MB 320-147877/1-A	Method Blank		69		78		96

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174236-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 8, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174236-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
OUTFALL008_2017012 1_COMP	440-174236-1	N/A	Water	1/21/2017 12:30:00 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174236-2:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.

MEC^x noted anomalies regarding sample management identified below.

- None were noted.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 8, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for these analytes including combined radium were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of gross alpha. Gross alpha was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits for all radionuclides.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were no performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on a sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.



III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401742362

Analysis Method E900

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM Validation Level: 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	3.62	1.44	1.63	1.63	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	7.54	1.32	1.03	1.03	pCi/L			

Analysis Method E901.1

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM Validation Level: 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-1.07	8.32	14.4	14.4	pCi/L	U	U	
Potassium-40	13966-00-2	-173	129	244	244	pCi/L	U	U	

Analysis Method E903.0

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM Validation Level: 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	-0.447	0.446	1.10	1.10	pCi/L	U G	UJ	*III

Analysis Method E904.0

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM Validation Level: 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.269	0.739	1.36	1.36	pCi/L	U G	U	

Analysis Method E905.0

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.149	0.292	0.544	0.544	pCi/L	U	U	

Analysis Method E906.0

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-4.05	162	292	292	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 12:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-174236-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.381	0.658	1.02	1.02	pCi/L	U G	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174236-2

Client Project/Site: Annual Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/23/2017 10:50:22 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/23/2017 10:50:22 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174236-1	Outfall008_20170121_Comp	Water	01/21/17 12:30	01/22/17 16:15

- 1
- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Job ID: 440-174236-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174236-2

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 2.2° C, 2.9° C, 4.1° C and 4.9° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-292256:

The gross alpha matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the lower control limit of 60% (56% and 59%). Sample matrix interference is suspected because the associated gross alpha laboratory control sample (LCS) recovery is within acceptance limits. The data have been qualified and reported.

Outfall008_20170121_Comp (440-174236-1), (LCS 160-292256/2-A), (LCSB 160-292256/3-A), (MB 160-292256/1-A), (440-174317-Q-1-K), (440-174317-Q-1-L MS), (440-174317-Q-1-N MSB), (440-174317-Q-1-O MSB) and (440-174317-Q-1-M MSD)

Method(s) 903.0: Radium-226 Prep Batch 160-290058:

The radium-226 detection goal was not met for the following samples due to the reduced sample volume attributed to the presence of matrix interferences (see prep NCM 103184 and 103185): Outfall008_20170121_Comp (440-174236-1). Analytical results are reported with the detection limit achieved.

Method(s) 904.0: Radium-228 Batch 290115:

The radium-228 detection goal was not met for the following samples due to a reduced aliquot, which can be attributed to the presence of matrix interferences (reference NCM 103187 and 103186): Outfall008_20170121_Comp (440-174236-1). Analytical results are reported with the detection limit achieved.

Method(s) A-01-R: Uranium Prep Batch: 160-290556

The detection goal of 1.00 pCi/L was not met for the following sample due to a reduced aliquot attributed to the presence of matrix interferences: Outfall008_20170121_Comp (440-174236-1). (See Prep NCM: 160-103413) Analytical results are reported with the detection limit achieved.

Method(s) PrecSep_0: Radium-228 Prep Batch 160-290115:

The following samples were prepared at a reduced aliquot due to cloudiness. Outfall008_20170121_Comp (440-174236-1).

Method(s) PrecSep-21: Radium-226 Prep Batch 160-290058:

The following samples were prepared at a reduced aliquot due to cloudiness. Outfall008_20170121_Comp (440-174236-1).

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences. Outfall008_20170121_Comp (440-174236-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	3.62		1.38	1.44	3.00	1.63	pCi/L	02/14/17 10:22	02/20/17 21:38	1
Gross Beta	7.54		1.08	1.32	4.00	1.03	pCi/L	02/14/17 10:22	02/20/17 21:38	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-1.07	U	8.32	8.32	20.0	14.4	pCi/L	01/26/17 14:59	01/26/17 17:26	1
Potassium-40	-173	U	128	129		244	pCi/L	01/26/17 14:59	01/26/17 17:26	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.447	U G	0.444	0.446	1.00	1.10	pCi/L	01/30/17 10:23	02/21/17 21:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	60.2		40 - 110					01/30/17 10:23	02/21/17 21:06	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.269	U G	0.738	0.739	1.00	1.36	pCi/L	01/30/17 13:37	02/20/17 11:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	60.2		40 - 110					01/30/17 13:37	02/20/17 11:19	1
Y Carrier	86.0		40 - 110					01/30/17 13:37	02/20/17 11:19	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.149	U	0.291	0.292	3.00	0.544	pCi/L	01/31/17 11:55	02/13/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.2		40 - 110					01/31/17 11:55	02/13/17 17:08	1
Y Carrier	106		40 - 110					01/31/17 11:55	02/13/17 17:08	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-4.05	U	162	162	500	292	pCi/L	02/21/17 12:33	02/21/17 23:18	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.381	U G	0.658	0.658	1.00	1.02	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	67.6		30 - 110					02/01/17 09:37	02/14/17 15:44	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Client Sample ID: Outfall008_20170121_Comp

Lab Sample ID: 440-174236-1

Date Collected: 01/21/17 12:30

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292256	02/14/17 10:22	MRB	TAL SL
Total/NA	Analysis	900.0		1			293387	02/20/17 21:38	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289225	01/26/17 17:26	KLS	TAL SL
Total/NA	Prep	PrecSep-21			499.85 mL	1.0 g	290058	01/30/17 10:23	AS	TAL SL
Total/NA	Analysis	903.0		1			293679	02/21/17 21:06	RTM	TAL SL
Total/NA	Prep	PrecSep_0			499.85 mL	1.0 g	290115	01/30/17 13:37	AS	TAL SL
Total/NA	Analysis	904.0		1			293387	02/20/17 11:19	RTM	TAL SL
Total/NA	Prep	PrecSep-7			501.24 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:08	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.1 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/21/17 23:18	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.02 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292517	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292256/1-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292256

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.9375		0.646	0.654	3.00	0.930	pCi/L	02/14/17 10:22	02/20/17 06:20	1
Gross Beta	0.7595	U	0.541	0.546	4.00	0.814	pCi/L	02/14/17 10:22	02/20/17 06:20	1

Lab Sample ID: LCS 160-292256/2-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	41.84		6.18	3.00	1.76	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-292256/3-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.1	88.28		9.35	4.00	0.832	pCi/L	97	75 - 125

Lab Sample ID: 440-174317-Q-1-L MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	1.10	U	49.9	28.11	F1	4.52	3.00	1.67	pCi/L	56	60 - 140

Lab Sample ID: 440-174317-Q-1-M MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	1.10	U	49.9	29.64	F1	4.89	3.00	1.70	pCi/L	59	60 - 140	0.16	1

Lab Sample ID: 440-174317-Q-1-N MSBT
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	3.67		91.1	89.43		9.48	4.00	1.08	pCi/L	94	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174317-Q-1-O MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	3.67		91.1	87.05		9.23	4.00	1.10	pCi/L	92	60 - 140	0.13	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-AK-1-B DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L	0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L	0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290058/1-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05389	U	0.113	0.113	1.00	0.282	pCi/L	01/30/17 10:23	02/21/17 20:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					01/30/17 10:23	02/21/17 20:55	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290058/2-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	7.329		1.04	1.00	0.310	pCi/L	122	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	84.1		40 - 110							

Lab Sample ID: 440-174317-F-1-C MS
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.177	U	6.01	7.673		1.11	1.00	0.362	pCi/L	128	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	86.4		40 - 110								

Lab Sample ID: 440-174317-F-1-D MSD
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.177	U	6.01	7.775		1.24	1.00	0.541	pCi/L	129	75 - 138	0.04	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	61.1		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290115/1-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290115

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1504	U	0.263	0.264	1.00	0.447	pCi/L	01/30/17 13:37	02/20/17 11:17	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	83.8		40 - 110							
Y Carrier	82.6		40 - 110							

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-290115/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.70		1.82	1.00	0.428	pCi/L	121	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	84.1		40 - 110						
Y Carrier	81.5		40 - 110						

Lab Sample ID: 440-174317-F-1-E MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.179	U	13.8	15.35		1.68	1.00	0.426	pCi/L	111	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	86.4		40 - 110								
Y Carrier	84.1		40 - 110								

Lab Sample ID: 440-174317-F-1-F MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.179	U	13.8	17.08		1.95	1.00	0.616	pCi/L	123	45 - 150	0.48	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	61.1		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac		
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1		
MB MB												
Carrier	%Yield	Qualifier	Limits							Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110							01/31/17 11:55	02/13/17 15:14	1
Y Carrier	98.7		40 - 110							01/31/17 11:55	02/13/17 15:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-O-1-B MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-O-1-C MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limits
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65 - 146	
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	78.6		30 - 110									

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146		0.04	1
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143		0.29	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	84.1		30 - 110											

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limits
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146	
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	78.6		30 - 110									

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146		0.22	1
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143		0.35	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	86.7		30 - 110											

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-AK-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	PrecSep-21	
MB 160-290058/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290058/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174317-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-174317-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 290115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	PrecSep_0	
MB 160-290115/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290115/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174317-F-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-174317-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	Evaporation	
MB 160-292256/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292256/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292256/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174317-Q-1-L MS	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-174317-Q-1-N MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-O MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174236-1	Outfall008_20170121_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

1 of 2
Ref 3

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p> <p>Test America Contact: Urvasi Patel 17461 Deitan Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-6065</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall [008] Outfall 008 Comp</p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 618.350.7912, 818.598.0702 (cell)</p>		<p>Sample ID: BRYAN BENSON</p>		<p>Sampling Date/Time: 1/20/2017 / 14:21</p>		<p>Sample Matrix: WM</p>		<p>Container Type: 1 L Glass Amber</p>		<p>Preservative: None</p>		<p>MSMSD Bottle #</p>		<p>Analysis Required:</p>		<p>Comments:</p>	
<p>Sample Description: Outfall008_20170120_Comp</p>		<p>Sample ID: Outfall008_20170120_Comp_F</p>		<p>Sampling Date/Time: 1/20/2017 / 14:21</p>		<p>Sample Matrix: WM</p>		<p>Container Type: 1 L Glass Amber</p>		<p>Preservative: None</p>		<p>MSMSD Bottle #</p>		<p>Analysis Required:</p>		<p>Comments: Utilized and unpreserved analysis. Separate NAD onto another workorder. Only test if first or second rain events of the year.</p>					
<p>Sample Description: Outfall008_20170120_Comp_Extra</p>		<p>Sample ID: Outfall008_20170120_Comp_Extra</p>		<p>Sampling Date/Time: 1/20/2017 / 14:21</p>		<p>Sample Matrix: WM</p>		<p>Container Type: borosilicate vials</p>		<p>Preservative: None</p>		<p>MSMSD Bottle #</p>		<p>Analysis Required:</p>		<p>Comments: Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Filter and preserve w/in 20hrs of receipt at lab.</p>					

These must be added to the same work order for COC Page 1 of 3 for Outfall 008 for the same event.
Legend: R = Routine, A = Annual

Relinquished By: [Signature]	Date/Time: 1/21/17	Company: [Signature]	Date/Time: 1/21/17	Company: [Signature]
Relinquished By: [Signature]	Date/Time: 1/21/17	Company: [Signature]	Date/Time: 1/21/17	Company: [Signature]
Relinquished By: [Signature]	Date/Time: 1/21/17	Company: [Signature]	Date/Time: 1/21/17	Company: [Signature]

Turn-around time (Check): 24 Hour: 72 Hour: 10 Day:
48 Hour: 5 Day: Normal:

Sample Integrity (Check): Intact: On Ice:

Data Requirements (Check): No Level IV: All Level IV:

1.8/17.7
W.P. / A.A.
3.3/4.1
3.8/17.7



2 of 2
2017

Test America

CHAIN OF CUSTODY FORMS

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Dertan Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall (008) Outfall 008 Comp</p>		<p>Project Manager: Nancy Gardiner 619.285.7132, 859.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Priority Pollutants - SCOCs (825) Cr (VI), Total (218.6) Asbestos (100.2) Chlorpyrifos, Diazinon (525.2)</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>	
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD			
Outfall 008	Outfall008_20170120_Comp	1/20/2017 14:15	WM	1 L Glass Amber 500 mL Poly	2 1	None	175 260	No No	X		
	Outfall008_20170120_Comp_Extra	1/20/2017 14:15	WM	1 L Glass Amber	2	HCl	275	No	X	Extract within 24-hours of sampling	
			WM	1 L Glass Amber	2	HCl	275	No	X	Hold	
			WM	1 L Glass Amber	2	HCl	275	No	X	Hold	
										Store all samples on COC for 6 months	

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 008 for this storm event.
 These must be added to the same work order for COC Page 1 of 3 for Outfall 008 for the same event.

Legend: R = Routine, A = Annual

Relinquished By: <i>BAIS</i>	Date/Time: 1/21/17	Company: <i>Agus</i>	Received By: <i>Wain G. Gagnon</i>	Date/Time: 1/21/17 18:00	Company: <i>Wain G. Gagnon</i>
Relinquished By: <i>Karin Gagnon</i>	Date/Time: 1/21/17 18:00	Company: <i>Wain G. Gagnon</i>	Received By: <i>Wain G. Gagnon</i>	Date/Time: 1/21/17 4:15	Company: <i>Wain G. Gagnon</i>

Turn-around time: (Check)
 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:
 Sample Integrity: (Check)
 Intact: On Ice:
 Data Requirements: (Check)
 No Level IV: All Level IV:

Handwritten notes:
 1.2/14.1
 3.0/14.1
 2.0/17.4
 1.0/17.7



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174236-2

Login Number: 174236

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174236-2

Login Number: 174236

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/24/17 03:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174236-1	Outfall008_20170121_Comp	60.2
440-174317-F-1-C MS	Matrix Spike	86.4
440-174317-F-1-D MSD	Matrix Spike Duplicate	61.1
LCS 160-290058/2-A	Lab Control Sample	84.1
MB 160-290058/1-A	Method Blank	83.8

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174236-1	Outfall008_20170121_Comp	60.2	86.0
440-174317-F-1-E MS	Matrix Spike	86.4	84.1
440-174317-F-1-F MSD	Matrix Spike Duplicate	61.1	83.0
LCS 160-290115/2-A	Lab Control Sample	84.1	81.5
MB 160-290115/1-A	Method Blank	83.8	82.6

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174110-G-1-E MS	Matrix Spike	84.4	98.3
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9
440-174236-1	Outfall008_20170121_Comp	81.2	106
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-F-1-E MS	Matrix Spike	78.6
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1
440-174236-1	Outfall008_20170121_Comp	67.6

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 008 Comp

TestAmerica Job ID: 440-174236-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175673-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 4, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175673-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170206_ Grab	440-175673-1	N/A	Water	2/6/2017 12:20:00 PM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-175673-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- The laboratory noted that, due to reduced sample volume received, the HEM reporting limit was elevated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 1664 — HEXANE EXTRACTABLE MATERIAL (OIL AND GREASE)

Marcia Hilchey of MEC^X reviewed the SDG on March 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401756731

Analysis Method *E1664*

Sample Name Outfall008_20170206_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/6/2017 12:20:00 PM **Validation Level:** 8

Lab Sample Name: 440-175673-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREASEND	5.6	1.6	mg/L	U	U		

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175673-1

Client Project/Site: Routine Outfall 008 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/22/2017 7:57:23 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/22/2017 7:57:23 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175673-1	Outfall008_20170206_Grab	Water	02/06/17 12:20	02/06/17 15:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Job ID: 440-175673-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175673-1

Comments

No additional comments.

Receipt

The samples were received on 2/6/2017 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

Organic Prep

Method(s) 1664A: Elevated reporting limits are provided for the following sample(s) due to insufficient sample provided for method 1664A preparation/analysis: Outfall008_20170206_Grab (440-175673-1)

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-389406 and analytical batch 440-389564. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Client Sample ID: Outfall008_20170206_Grab

Lab Sample ID: 440-175673-1

Date Collected: 02/06/17 12:20

Matrix: Water

Date Received: 02/06/17 15:15

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.6	1.6	mg/L		02/20/17 18:40	02/21/17 13:14	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Client Sample ID: Outfall008_20170206_Grab

Lab Sample ID: 440-175673-1

Date Collected: 02/06/17 12:20

Matrix: Water

Date Received: 02/06/17 15:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			888 mL	1000 mL	389406	02/20/17 18:40	JSS	TAL IRV
Total/NA	Analysis	1664A		1			389564	02/21/17 13:14	JSS	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-389406/1-A
Matrix: Water
Analysis Batch: 389564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389406

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/20/17 18:40	02/21/17 13:14	1

Lab Sample ID: LCS 440-389406/2-A
Matrix: Water
Analysis Batch: 389564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389406

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	33.0		mg/L		83	78 - 114

Lab Sample ID: LCSD 440-389406/3-A
Matrix: Water
Analysis Batch: 389564

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389406

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	33.8		mg/L		85	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

General Chemistry

Prep Batch: 389406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175673-1	Outfall008_20170206_Grab	Total/NA	Water	1664A	
MB 440-389406/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-389406/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-389406/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 389564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175673-1	Outfall008_20170206_Grab	Total/NA	Water	1664A	389406
MB 440-389406/1-A	Method Blank	Total/NA	Water	1664A	389406
LCS 440-389406/2-A	Lab Control Sample	Total/NA	Water	1664A	389406
LCSD 440-389406/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	389406

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-175673-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175673-1

Login Number: 175673

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175840-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175840-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170207_Comp	440-175840-1	N/A	Water	2/7/17 8:15 AM	E1613B, E200.8, E245.1, E300, E314.0, EPA-821-R-02-013, SM2540C, SM4500-CN-E, SM4500-NH3G
Outfall008_20170207_Comp_F	440-175840-2	N/A	Water	2/7/17 8:15 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175840-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, OCDD, and OCDF, and detects for totals TCDF, HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, HpCDF, HxCDD, and TCDF in the method blank were the same peaks comprising the totals in sample Outfall008_20170207_Comp. The results for totals HpCDD, HpCDF, HxCDD, and TCDF were qualified as



nondetected (U). The reviewer verified that peaks comprising the result for total HxCDF in the sample included more peaks than the method blank total. The sample result for total HxCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for those results flagged by the laboratory as EMPCs. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL. A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC).

IV. METHODS 200.8 AND 245.1— METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 7, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall008_20170121_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 43 hours after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results, with the exception of dissolved copper (1.05 $\mu\text{g/L}$) in the method blank. The associated sample result was detected at greater than RL and $< 5\text{X}$ the method blank concentration and was qualified as estimated with high bias (J+).

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2\text{x}$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall008_20170207_Comp and Outfall008_20170207_Comp_F for method 200.8 and on sample Outfall008_20170207_Comp_F for method 245.1. Results were not assessed when the parent sample concentration exceeded the spike



amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Method blanks and calibration blanks had no detects.

V.3.2 LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall008_20170207_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VI. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 300.0 and 821-R-02-013, *Standard Methods for the Examination of Water and Wastewater 2540C, 4500-NH3-G and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

Chronic toxicity was analyzed 17 hours past the 36-hour holding time requirement. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall008_20170207_Comp for TDS. The RPD was $\leq 5\%$.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall008_20170207_Comp for ammonia, anions, and total cyanide. Recoveries and RPDs were within the laboratory control limits.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401758401

Analysis Method E1613B

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000011	0.000096	0.00000015	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000086	0.000096	0.00000021	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000048	0.000048	0.00000014	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000011	0.000048	0.00000017	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000050	0.000048	0.00000017	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000048	0.00000017	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000048	0.00000014	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000048	0.00000017	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000033	0.000048	0.00000015	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000043	0.000048	0.00000015	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000022	0.000048	0.00000012	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000048	0.00000017	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000048	0.00000022	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000053	0.000048	0.00000014	ug/L	J,DX	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000048	0.00000016	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000096	0.0000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000070	0.000096	0.00000010	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000096	0.00000016	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.00000098	0.000048	0.00000016	ug/L	J,DXqMB	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000028	0.000048	0.00000017	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.00000097	0.000048	0.00000016	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000054	0.000048	0.00000014	ug/L	J,DXqMB	U	B

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000048	0.00000016	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000048	0.00000022	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000012	0.0000096	0.00000010	ug/L	J,DXMB	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000096	0.00000016	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.5	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall008_20170207_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.7	2.0	0.50	ug/L	QPMB	J+	H, B
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall008_20170207_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/7/2017 8:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175840-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/7/2017 8:15:00 AM **Validation Level:****Lab Sample Name:** 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	8.8	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	3.6	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	3.6	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	8.6	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/7/2017 8:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	2.9	4.0	0.95	ug/L	J,DX	J	DNQ

Analysis Method EPA-821-R-02-013**Sample Name** Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/7/2017 8:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	-28.24			% SURV		J	H

Analysis Method SM2540C**Sample Name** Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/7/2017 8:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	190	10	5.0	mg/L			

Analysis Method *SM4500-CN-E*

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method *SM4500-NH3G*

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175840-1

Client Project/Site: Routine Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/4/2017 9:47:19 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/4/2017 9:47:19 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175840-1	Outfall008_20170207_Comp	Water	02/07/17 08:15	02/07/17 15:10
440-175840-2	Outfall008_20170207_Comp_F	Water	02/07/17 08:15	02/07/17 15:10

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Job ID: 440-175840-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175840-1**

Comments

No additional comments.

Receipt

The samples were received on 2/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.6° C, 1.7° C, 2.5° C, 2.7° C and 3.1° C.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.8		0.50	0.25	mg/L			02/07/17 17:55	1
Nitrate as N	3.6		0.11	0.055	mg/L			02/07/17 17:55	1
Nitrite as N	ND		0.15	0.070	mg/L			02/07/17 17:55	1
Sulfate	8.6		0.50	0.25	mg/L			02/07/17 17:55	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	2.9	J,DX	4.0	0.95	ug/L			02/08/17 10:13	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	3.6		0.15	0.070	mg/L			02/20/17 09:38	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,7,8-PeCDD	ND		0.000048	0.0000002	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
2,3,4,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,4,7,8-HxCDD	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,6,7,8-HxCDD	0.00000033	J,DX q MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,7,8,9-HxCDD	0.00000022	J,DX q MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,4,7,8-HxCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,6,7,8-HxCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,7,8,9-HxCDF	0.00000043	J,DX MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
2,3,4,6,7,8-HxCDF	0.00000053	J,DX	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,4,6,7,8-HpCDD	0.00000011	J,DX MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,4,6,7,8-HpCDF	0.00000048	J,DX q MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
1,2,3,4,7,8,9-HpCDF	0.00000050	J,DX q MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
OCDD	0.00000086	J,DX q MB	0.000096	0.0000002	ug/L		02/14/17 14:51	02/17/17 07:50	1
OCDF	0.00000011	J,DX q MB	0.000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
Total TCDD	ND		0.0000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
Total TCDF	0.00000012	J,DX MB	0.0000096	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
Total PeCDD	ND		0.000048	0.0000002	ug/L		02/14/17 14:51	02/17/17 07:50	1
Total PeCDF	ND		0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HxCDD	0.00000054	J,DX q MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
				4					
Total HxCDF	0.00000097	J,DX MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
				6					
Total HpCDD	0.00000028	J,DX MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
				7					
Total HpCDF	0.00000098	J,DX q MB	0.000048	0.0000001	ug/L		02/14/17 14:51	02/17/17 07:50	1
				6					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164				02/14/17 14:51	02/17/17 07:50	1
13C-2,3,7,8-TCDF	67		24 - 169				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,7,8-PeCDD	82		25 - 181				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,7,8-PeCDF	70		24 - 185				02/14/17 14:51	02/17/17 07:50	1
13C-2,3,4,7,8-PeCDF	81		21 - 178				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,4,7,8-HxCDD	81		32 - 141				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,6,7,8-HxCDD	89		28 - 130				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,4,7,8-HxCDF	80		26 - 152				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,6,7,8-HxCDF	82		26 - 123				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,7,8,9-HxCDF	73		29 - 147				02/14/17 14:51	02/17/17 07:50	1
13C-2,3,4,6,7,8-HxCDF	83		28 - 136				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,4,6,7,8-HpCDD	80		23 - 140				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,4,6,7,8-HpCDF	81		28 - 143				02/14/17 14:51	02/17/17 07:50	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138				02/14/17 14:51	02/17/17 07:50	1
13C-OCDD	84		17 - 157				02/14/17 14:51	02/17/17 07:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197				02/14/17 14:51	02/17/17 07:50	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000096	0.0000014	ug/L		02/14/17 14:51	02/18/17 00:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	62		24 - 169				02/14/17 14:51	02/18/17 00:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	81		35 - 197				02/14/17 14:51	02/18/17 00:02	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1
Cadmium	ND		1.0	0.25	ug/L		02/15/17 10:03	02/16/17 15:22	1
Copper	2.5		2.0	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1
Lead	ND		1.0	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1
Antimony	ND		2.0	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1
Selenium	ND		2.0	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1
Thallium	ND		1.0	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/08/17 12:37	02/10/17 22:51	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	190		10	5.0	mg/L			02/13/17 09:26	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/09/17 15:59	02/13/17 17:48	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/15/17 20:07	1

Client Sample ID: Outfall008_20170207_Comp_F

Lab Sample ID: 440-175840-2

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	1.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1
Cadmium	ND	QP	1.0	0.25	ug/L		02/14/17 15:18	02/15/17 14:07	1
Copper	2.7	QP MB	2.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1
Lead	ND	QP	1.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1
Antimony	ND	QP	2.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1
Selenium	ND	QP	2.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1
Thallium	ND	QP	1.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/17/17 12:01	02/18/17 05:53	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
Chronic-Selenestrum	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			386935	02/07/17 17:55	NTN	TAL IRV
Total/NA	Analysis	300.0		1			386936	02/07/17 17:55	NTN	TAL IRV
Total/NA	Analysis	314.0		1			387152	02/08/17 10:13	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			389263	02/20/17 09:38	TLN	TAL IRV
Total/NA	Prep	1613B			1039.9 mL	20 uL	150514	02/14/17 14:51	DXD	TAL SAC
Total/NA	Analysis	1613B		1			151022	02/17/17 07:50	ALM	TAL SAC
Total/NA	Prep	1613B	RA		1039.9 mL	20 uL	150514	02/14/17 14:51	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			151375	02/18/17 00:02	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	388401	02/15/17 10:03	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1			388766	02/16/17 15:22	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	387267	02/08/17 12:37	DB	TAL IRV
Total/NA	Analysis	245.1		1			387766	02/10/17 22:51	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	387967	02/13/17 09:26	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387501	02/09/17 15:59	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388079	02/13/17 17:48	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	388562	02/15/17 20:07	EN	TAL IRV

Client Sample ID: Outfall008_20170207_Comp_F

Lab Sample ID: 440-175840-2

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387421	02/09/17 10:24	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388238	02/14/17 15:18	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388493	02/15/17 14:07	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387421	02/09/17 10:24	DT	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	388919	02/17/17 12:01	DB	TAL IRV
Dissolved	Analysis	245.1		1			389685	02/18/17 05:53	DB	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-386935/5
Matrix: Water
Analysis Batch: 386935

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/07/17 12:44	1
Nitrite as N	ND		0.15	0.070	mg/L			02/07/17 12:44	1

Lab Sample ID: LCS 440-386935/4
Matrix: Water
Analysis Batch: 386935

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.18		mg/L		104	90 - 110
Nitrite as N	1.52	1.61		mg/L		106	90 - 110

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 386935

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	3.6		1.13	4.89		mg/L		110	80 - 120
Nitrite as N	ND		1.52	1.60		mg/L		105	80 - 120

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 386935

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nitrate as N	3.6		1.13	4.88		mg/L		110	80 - 120	0	20
Nitrite as N	ND		1.52	1.60		mg/L		105	80 - 120	0	20

Lab Sample ID: MB 440-386936/5
Matrix: Water
Analysis Batch: 386936

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/07/17 12:44	1
Sulfate	ND		0.50	0.25	mg/L			02/07/17 12:44	1

Lab Sample ID: LCS 440-386936/4
Matrix: Water
Analysis Batch: 386936

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.00		mg/L		100	90 - 110
Sulfate	5.00	5.22		mg/L		104	90 - 110

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 386936

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	8.8		5.00	14.0		mg/L		105	80 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 386936

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	8.6		5.00	13.8		mg/L		103	80 - 120

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 386936

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	8.8		5.00	14.0		mg/L		105	80 - 120	0	20
Sulfate	8.6		5.00	13.8		mg/L		104	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-387152/3
Matrix: Water
Analysis Batch: 387152

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/08/17 08:45	1

Lab Sample ID: LCS 440-387152/2
Matrix: Water
Analysis Batch: 387152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	26.0		ug/L		104	85 - 115

Lab Sample ID: MRL 440-387152/5
Matrix: Water
Analysis Batch: 387152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.21		ug/L		105	75 - 125

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 387152

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	2.9	J,DX	25.0	30.5		ug/L		110	80 - 120

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 387152

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	2.9	J,DX	25.0	31.3		ug/L		114	80 - 120	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,4,7,8-PeCDF	76		21 - 178	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,6,7,8-HxCDD	82		28 - 130	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147	02/14/17 14:51	02/17/17 05:32	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143	02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8,9-HpCDF	74		26 - 138	02/14/17 14:51	02/17/17 05:32	1
13C-OCDD	75		17 - 157	02/14/17 14:51	02/17/17 05:32	1
Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
%Recovery	Qualifier					
37Cl4-2,3,7,8-TCDD	93		35 - 197	02/14/17 14:51	02/17/17 05:32	1

Lab Sample ID: LCS 320-150514/2-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDF	0.000200	0.000198	MB	ug/L		99	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000974		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000969		ug/L		97	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000965		ug/L		96	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000938		ug/L		94	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000980	MB	ug/L		98	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000863	MB	ug/L		86	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000909		ug/L		91	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000973		ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000958	MB	ug/L		96	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000979		ug/L		98	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000923	MB	ug/L		92	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000953	MB	ug/L		95	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000895	MB	ug/L		89	78 - 138
OCDD	0.00200	0.00187	MB	ug/L		93	78 - 144
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170
Isotope Dilution	LCS LCS		Limits				
%Recovery	Qualifier						
13C-2,3,7,8-TCDD	72		20 - 175				
13C-2,3,7,8-TCDF	70		22 - 152				
13C-1,2,3,7,8-PeCDD	83		21 - 227				
13C-1,2,3,7,8-PeCDF	74		21 - 192				
13C-2,3,4,7,8-PeCDF	82		13 - 328				
13C-1,2,3,4,7,8-HxCDD	81		21 - 193				
13C-1,2,3,6,7,8-HxCDD	84		25 - 163				
13C-1,2,3,4,7,8-HxCDF	80		19 - 202				
13C-1,2,3,6,7,8-HxCDF	80		21 - 159				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-150514/2-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150514

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-2,3,4,6,7,8-HxCDF	81		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	80		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	80		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	81		20 - 186
13C-OCDD	84		13 - 199
Surrogate	LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	94		31 - 191

Lab Sample ID: LCSD 320-150514/3-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150514

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158	8	50
2,3,7,8-TCDF	0.000200	0.000208	MB	ug/L		104	75 - 158	5	50
1,2,3,7,8-PeCDD	0.00100	0.000969		ug/L		97	70 - 142	1	50
1,2,3,7,8-PeCDF	0.00100	0.000983		ug/L		98	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000986		ug/L		99	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000939		ug/L		94	70 - 164	0	50
1,2,3,6,7,8-HxCDD	0.00100	0.000976	MB	ug/L		98	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000848	MB	ug/L		85	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000923		ug/L		92	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.000964		ug/L		96	84 - 130	1	50
1,2,3,7,8,9-HxCDF	0.00100	0.000954	MB	ug/L		95	78 - 130	0	50
2,3,4,6,7,8-HxCDF	0.00100	0.000994		ug/L		99	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000921	MB	ug/L		92	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000953	MB	ug/L		95	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000899	MB	ug/L		90	78 - 138	0	50
OCDD	0.00200	0.00185	MB	ug/L		93	78 - 144	1	50
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170	0	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	63		20 - 175
13C-2,3,7,8-TCDF	62		22 - 152
13C-1,2,3,7,8-PeCDD	76		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-1,2,3,4,7,8-HxCDD	78		21 - 193
13C-1,2,3,6,7,8-HxCDD	84		25 - 163
13C-1,2,3,4,7,8-HxCDF	77		19 - 202
13C-1,2,3,6,7,8-HxCDF	79		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	75		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	77		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	76		20 - 186

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-150514/3-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150514

	LCSD %Recovery	LCSD Qualifier	Limits
Isotope Dilution			
13C-OCDD	78		13 - 199
Surrogate			
37Cl4-2,3,7,8-TCDD	83		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151375

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000020	ug/L	-	02/14/17 14:51	02/17/17 23:24	1
Isotope Dilution									
13C-2,3,7,8-TCDF - RA	61		24 - 169				02/14/17 14:51	02/17/17 23:24	1
Surrogate									
37Cl4-2,3,7,8-TCDD - RA	88		35 - 197				02/14/17 14:51	02/17/17 23:24	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-388401/1-A
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 388401

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L	-	02/15/17 10:03	02/16/17 15:17	1
Cadmium	ND		1.0	0.25	ug/L	-	02/15/17 10:03	02/16/17 15:17	1
Copper	ND		2.0	0.50	ug/L	-	02/15/17 10:03	02/16/17 15:17	1
Lead	ND		1.0	0.50	ug/L	-	02/15/17 10:03	02/16/17 15:17	1
Antimony	ND		2.0	0.50	ug/L	-	02/15/17 10:03	02/16/17 15:17	1
Selenium	ND		2.0	0.50	ug/L	-	02/15/17 10:03	02/16/17 15:17	1
Thallium	ND		1.0	0.50	ug/L	-	02/15/17 10:03	02/16/17 15:17	1

Lab Sample ID: LCS 440-388401/2-A
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 388401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits %Rec.
Silver	80.0	73.3		ug/L	-	92	85 - 115
Cadmium	80.0	77.9		ug/L	-	97	85 - 115
Copper	80.0	78.8		ug/L	-	99	85 - 115
Lead	80.0	76.9		ug/L	-	96	85 - 115
Antimony	80.0	79.3		ug/L	-	99	85 - 115
Selenium	80.0	79.3		ug/L	-	99	85 - 115
Thallium	80.0	80.9		ug/L	-	101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175840-1 MS

Matrix: Water

Analysis Batch: 388766

Client Sample ID: Outfall008_20170207_Comp

Prep Type: Total Recoverable

Prep Batch: 388401

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	RPD
Silver	ND		80.0	70.7		ug/L		88	70 - 130	
Cadmium	ND		80.0	75.8		ug/L		95	70 - 130	
Copper	2.5		80.0	78.5		ug/L		95	70 - 130	
Lead	ND		80.0	74.1		ug/L		93	70 - 130	
Antimony	ND		80.0	78.5		ug/L		98	70 - 130	
Selenium	ND		80.0	75.3		ug/L		94	70 - 130	
Thallium	ND		80.0	78.4		ug/L		98	70 - 130	

Lab Sample ID: 440-175840-1 MSD

Matrix: Water

Analysis Batch: 388766

Client Sample ID: Outfall008_20170207_Comp

Prep Type: Total Recoverable

Prep Batch: 388401

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
Silver	ND		80.0	71.4		ug/L		89	70 - 130	1	20	
Cadmium	ND		80.0	76.9		ug/L		96	70 - 130	1	20	
Copper	2.5		80.0	78.8		ug/L		95	70 - 130	0	20	
Lead	ND		80.0	74.6		ug/L		93	70 - 130	1	20	
Antimony	ND		80.0	79.4		ug/L		99	70 - 130	1	20	
Selenium	ND		80.0	76.0		ug/L		95	70 - 130	1	20	
Thallium	ND		80.0	78.9		ug/L		99	70 - 130	1	20	

Lab Sample ID: MB 440-387421/1-D

Matrix: Water

Analysis Batch: 388493

Client Sample ID: Method Blank

Prep Type: Dissolved

Prep Batch: 388238

Analyte	MB		RL	MDL	Unit	D	Prepared		Analyzed		Dil	Fac
	Result	Qualifier					Start	End	Start	End		
Silver	ND		1.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	
Cadmium	ND		1.0	0.25	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	
Copper	1.05	J,DX	2.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	
Lead	ND		1.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	
Antimony	ND		2.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	
Selenium	ND		2.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	
Thallium	ND		1.0	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	02/15/17 14:04		1	

Lab Sample ID: LCS 440-387421/2-D

Matrix: Water

Analysis Batch: 388493

Client Sample ID: Lab Control Sample

Prep Type: Dissolved

Prep Batch: 388238

Analyte	Spike	LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	RPD
Silver	80.0	80.3		ug/L		100	85 - 115	
Cadmium	80.0	80.5		ug/L		101	85 - 115	
Copper	80.0	81.1		ug/L		101	85 - 115	
Lead	80.0	83.2		ug/L		104	85 - 115	
Antimony	80.0	82.8		ug/L		103	85 - 115	
Selenium	80.0	80.3		ug/L		100	85 - 115	
Thallium	80.0	86.4		ug/L		108	85 - 115	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175840-2 MS

Matrix: Water

Analysis Batch: 388493

Client Sample ID: Outfall008_20170207_Comp_F

Prep Type: Dissolved

Prep Batch: 388238

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Silver	ND	QP	80.0	77.8		ug/L		97	70 - 130	
Cadmium	ND	QP	80.0	77.8		ug/L		97	70 - 130	
Copper	2.7	QP MB	80.0	82.1		ug/L		99	70 - 130	
Lead	ND	QP	80.0	81.5		ug/L		102	70 - 130	
Antimony	ND	QP	80.0	81.6		ug/L		102	70 - 130	
Selenium	ND	QP	80.0	75.4		ug/L		94	70 - 130	
Thallium	ND	QP	80.0	84.6		ug/L		106	70 - 130	

Lab Sample ID: 440-175840-2 MSD

Matrix: Water

Analysis Batch: 388493

Client Sample ID: Outfall008_20170207_Comp_F

Prep Type: Dissolved

Prep Batch: 388238

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Silver	ND	QP	80.0	77.4		ug/L		97	70 - 130	1	20
Cadmium	ND	QP	80.0	78.2		ug/L		98	70 - 130	0	20
Copper	2.7	QP MB	80.0	81.4		ug/L		98	70 - 130	1	20
Lead	ND	QP	80.0	81.4		ug/L		102	70 - 130	0	20
Antimony	ND	QP	80.0	82.2		ug/L		103	70 - 130	1	20
Selenium	ND	QP	80.0	76.4		ug/L		95	70 - 130	1	20
Thallium	ND	QP	80.0	84.6		ug/L		106	70 - 130	0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-387267/1-A

Matrix: Water

Analysis Batch: 387765

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 387267

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		02/08/17 12:37	02/10/17 19:10	1

Lab Sample ID: LCS 440-387267/2-A

Matrix: Water

Analysis Batch: 387765

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 387267

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	8.17		ug/L		102	85 - 115

Lab Sample ID: 440-175802-N-1-B MS

Matrix: Water

Analysis Batch: 387765

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 387267

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Mercury	0.11	J,DX	8.00	4.69	LN	ug/L		57	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-175802-N-1-C MSD
Matrix: Water
Analysis Batch: 387765

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387267

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	0.11	J,DX	8.00	4.62	LN	ug/L		56	70 - 130	1	20

Lab Sample ID: MB 440-387421/1-G
Matrix: Water
Analysis Batch: 389685

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388919

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/17/17 12:01	02/18/17 05:48	1

Lab Sample ID: LCS 440-387421/2-G
Matrix: Water
Analysis Batch: 389685

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388919

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.82		ug/L		98	85 - 115

Lab Sample ID: 440-175840-2 MS
Matrix: Water
Analysis Batch: 389685

Client Sample ID: Outfall008_20170207_Comp_F
Prep Type: Dissolved
Prep Batch: 388919

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	QP	8.00	7.80		ug/L		97	70 - 130

Lab Sample ID: 440-175840-2 MSD
Matrix: Water
Analysis Batch: 389685

Client Sample ID: Outfall008_20170207_Comp_F
Prep Type: Dissolved
Prep Batch: 388919

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	ND	QP	8.00	8.08		ug/L		101	70 - 130	4	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-387967/1
Matrix: Water
Analysis Batch: 387967

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/13/17 09:26	1

Lab Sample ID: LCS 440-387967/2
Matrix: Water
Analysis Batch: 387967

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	992		mg/L		99	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 440-175840-1 DU
Matrix: Water
Analysis Batch: 387967

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	190		194		mg/L		0.5	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387501/1-A
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387501

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/09/17 15:59	02/13/17 17:48	1

Lab Sample ID: LCS 440-387501/2-A
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387501

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	106		ug/L		106	90 - 110

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 387501

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	96.9		ug/L		97	70 - 115

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 387501

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.5		ug/L		100	70 - 115	3	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-388562/12
Matrix: Water
Analysis Batch: 388562

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/15/17 19:56	1

Lab Sample ID: LCS 440-388562/13
Matrix: Water
Analysis Batch: 388562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	5.180		mg/L		104	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: MRL 440-388562/11
Matrix: Water
Analysis Batch: 388562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2730		mg/L		137	10 - 200

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 388562

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.250		mg/L		105	90 - 110

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 388562

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.340		mg/L		107	90 - 110	2	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

HPLC/IC

Analysis Batch: 386935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	300.0	
MB 440-386935/5	Method Blank	Total/NA	Water	300.0	
LCS 440-386935/4	Lab Control Sample	Total/NA	Water	300.0	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	300.0	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	300.0	

Analysis Batch: 386936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	300.0	
MB 440-386936/5	Method Blank	Total/NA	Water	300.0	
LCS 440-386936/4	Lab Control Sample	Total/NA	Water	300.0	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	300.0	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	300.0	

Analysis Batch: 387152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	314.0	
MB 440-387152/3	Method Blank	Total/NA	Water	314.0	
LCS 440-387152/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-387152/5	Lab Control Sample	Total/NA	Water	314.0	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	314.0	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	314.0	

Analysis Batch: 389263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 150514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	1613B	
440-175840-1 - RA	Outfall008_20170207_Comp	Total/NA	Water	1613B	
MB 320-150514/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-150514/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-150514/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-150514/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 151022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	1613B	150514
MB 320-150514/1-A	Method Blank	Total/NA	Water	1613B	150514
LCS 320-150514/2-A	Lab Control Sample	Total/NA	Water	1613B	150514
LCSD 320-150514/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	150514

Analysis Batch: 151375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1 - RA	Outfall008_20170207_Comp	Total/NA	Water	1613B	150514
MB 320-150514/1-A - RA	Method Blank	Total/NA	Water	1613B	150514

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Metals

Prep Batch: 387267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	245.1	
MB 440-387267/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-387267/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-175802-N-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-175802-N-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Filtration Batch: 387421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	FILTRATION	
MB 440-387421/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-387421/1-G	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-387421/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	FILTRATION	
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	FILTRATION	

Analysis Batch: 387765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-387267/1-A	Method Blank	Total/NA	Water	245.1	387267
LCS 440-387267/2-A	Lab Control Sample	Total/NA	Water	245.1	387267
440-175802-N-1-B MS	Matrix Spike	Total/NA	Water	245.1	387267
440-175802-N-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	387267

Analysis Batch: 387766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	245.1	387267

Prep Batch: 388238

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	200.2	387421
MB 440-387421/1-D	Method Blank	Dissolved	Water	200.2	387421
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	200.2	387421
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	200.2	387421
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	200.2	387421

Prep Batch: 388401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total Recoverable	Water	200.2	
MB 440-388401/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-388401/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175840-1 MS	Outfall008_20170207_Comp	Total Recoverable	Water	200.2	
440-175840-1 MSD	Outfall008_20170207_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 388493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238
MB 440-387421/1-D	Method Blank	Dissolved	Water	200.8	388238
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	200.8	388238
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Metals (Continued)

Analysis Batch: 388766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total Recoverable	Water	200.8	388401
MB 440-388401/1-A	Method Blank	Total Recoverable	Water	200.8	388401
LCS 440-388401/2-A	Lab Control Sample	Total Recoverable	Water	200.8	388401
440-175840-1 MS	Outfall008_20170207_Comp	Total Recoverable	Water	200.8	388401
440-175840-1 MSD	Outfall008_20170207_Comp	Total Recoverable	Water	200.8	388401

Prep Batch: 388919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	245.1	387421
MB 440-387421/1-G	Method Blank	Dissolved	Water	245.1	387421
LCS 440-387421/2-G	Lab Control Sample	Dissolved	Water	245.1	387421
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	245.1	387421
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	245.1	387421

Analysis Batch: 389685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	245.1	388919
MB 440-387421/1-G	Method Blank	Dissolved	Water	245.1	388919
LCS 440-387421/2-G	Lab Control Sample	Dissolved	Water	245.1	388919
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	245.1	388919
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	245.1	388919

General Chemistry

Prep Batch: 387501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	Distill/CN	
MB 440-387501/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387501/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	Distill/CN	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	Distill/CN	

Analysis Batch: 387967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	SM 2540C	
MB 440-387967/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-387967/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-175840-1 DU	Outfall008_20170207_Comp	Total/NA	Water	SM 2540C	

Analysis Batch: 388079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	SM 4500 CN E	387501
MB 440-387501/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387501
LCS 440-387501/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387501
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	SM 4500 CN E	387501
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	SM 4500 CN E	387501

Analysis Batch: 388562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	SM 4500 NH3 G	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

General Chemistry (Continued)

Analysis Batch: 388562 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-388562/12	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-388562/13	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-388562/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	SM 4500 NH3 G	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	SM 4500 NH3 G	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
QP	Holding time Immediate. Analyzed as close to receipt as possible
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 28, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall008_20170207_Comp (440-175840-1)
DATE RECEIVED: 9 Feb - 17
ABC LAB NO.: TAM0217.071

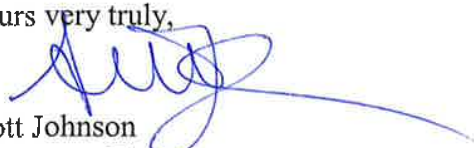
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = -28.24 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 28 Feb-17 08:20 (p 1 of 1)
 Test Code: TAM0217.071sel | 16-5603-8319

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 08-1802-2554	Test Type: Cell Growth	Analyst:
Start Date: 09 Feb-17 13:04	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Feb-17 11:20	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-2598-1154	Code: TAM0217.071s	Client: Test America Irvine
Sample Date: 07 Feb-17 08:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 09 Feb-17 10:41	Source: Bioassay Report	
Sample Age: 53h (1.4 °C)	Station: Outfall008_20170207_Comp (440-175840-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
00-1474-3521	Cell Density	TST-Welch's t Test	<1.0E-37	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
00-1474-3521	Cell Density	Control CV	0.05174	<<	0.2	Yes	Passes Criteria
00-1474-3521	Cell Density	Control Resp	1.25E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.246E+6	1.192E+6	1.300E+6	1.144E+6	1.320E+6	2.279E+4	6.446E+4	5.17%	0.00%
100		8	1.598E+6	1.544E+6	1.651E+6	1.522E+6	1.702E+6	2.282E+4	6.454E+4	4.04%	-28.24%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.173E+6	1.210E+6	1.144E+6	1.262E+6	1.316E+6	1.320E+6	1.260E+6	1.281E+6
100		1.530E+6	1.545E+6	1.624E+6	1.702E+6	1.657E+6	1.578E+6	1.622E+6	1.522E+6

CETIS Analytical Report

Report Date: 28 Feb-17 08:20 (p 1 of 2)
 Test Code: TAM0217.071set | 16-5603-8319

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 00-1474-3521	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	Analyzed: 24 Feb-17 10:52	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 08-1802-2554	Test Type: Cell Growth	Analyst:	Start Date: 09 Feb-17 13:04	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Feb-17 11:20	Species: Selenastrum capricornutum	Brine: Not Applicable	Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-2598-1154	Code: TAM0217.071s	Client: Test America Irvine	Sample Date: 07 Feb-17 08:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 09 Feb-17 10:41	Source: Bioassay Report		Sample Age: 53h (1.4 °C)	Station: Outfall008_20170207_Comp (440-175840-	

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test								
Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	23.26	0.6955	12	GDF	<1.0E-37	Non-Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.05174	<<	0.2	Yes	Passes Criteria
Control Resp	1.25E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)	
Between	4.949E+11	4.949E+11	1	119	<1.0E-37	Significant Effect	
Error	5.824E+10	4.16E+09	14				
Total	5.532E+11		15				

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Levene Equality of Variance Test	0.006064	8.862	0.9390	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.07087	8.862	0.7939	Equal Variances	
Variances	Variance Ratio F Test	1.003	8.885	0.9974	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.3591	3.878	0.4549	Normal Distribution	
Distribution	D'Agostino Skewness Test	0.1076	2.576	0.9143	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1529	0.2471	0.4196	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.9549	0.8408	0.5713	Normal Distribution	

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.246E+6	1.192E+6	1.300E+6	1.261E+6	1.144E+6	1.320E+6	2.279E+4	5.17%	0.00%
100		8	1.598E+6	1.544E+6	1.651E+6	1.600E+6	1.522E+6	1.702E+6	2.282E+4	4.04%	-28.24%

Cell Density Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	N	1.173E+6	1.210E+6	1.144E+6	1.262E+6	1.316E+6	1.320E+6	1.260E+6	1.281E+6	
100		1.530E+6	1.545E+6	1.624E+6	1.702E+6	1.657E+6	1.578E+6	1.622E+6	1.522E+6	

CETIS Measurement Report

Report Date: 28 Feb-17 08:20 (p 1 of 2)
 Test Code: TAM0217.071sel | 16-5603-8319

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 08-1802-2554	Test Type: Cell Growth	Analyst:
Start Date: 09 Feb-17 13:04	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 13 Feb-17 11:20	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-2598-1154	Code: TAM0217.071s	Client: Test America Irvine
Sample Date: 07 Feb-17 08:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 09 Feb-17 10:41	Source: Bioassay Report	
Sample Age: 53h (1.4 °C)	Station: Outfall008_20170207_Comp (440-175840-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	101			101	101	0	0	0.0%	0
Overall		2	84.5	-125.2	294.2	68	101	16.5	23.33	27.61%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	454.4	438.3	470.5	439	472	5.784	12.93	2.85%	0
100		5	646.6	637.4	655.8	635	655	3.311	7.403	1.15%	0
Overall		10	550.5	477.7	623.3	439	655	32.19	101.8	18.49%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
100		1	123			123	123	0	0	0.0%	0
Overall		2	111	-41.47	263.5	99	123	12	16.97	15.29%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.66	7.348	7.972	7.4	7.9	0.1122	0.251	3.28%	0
100		5	7.96	7.793	8.127	7.8	8.1	0.06	0.1342	1.69%	0
Overall		10	7.81	7.633	7.987	7.4	8.1	0.0781	0.247	3.16%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.04	23.97	24.11	24	24.1	0.02445	0.05468	0.23%	0
100		5	24.04	23.97	24.11	24	24.1	0.02445	0.05468	0.23%	0
Overall		10	24.04	24	24.08	24	24.1	0.01633	0.05164	0.21%	0 (0%)

CETIS Measurement Report

Report Date: 28 Feb-17 08:20 (p 2 of 2)

Test Code: TAM0217.071sel | 16-5603-8319

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	68
100		101

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	439	445	456	460	472
100		635	645	649	649	655

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	99
100		123

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.4	7.4	7.9	7.9	7.7
100		7.9	7.9	7.8	8.1	8.1

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.1	24	24	24	24.1
100		24.1	24	24	24	24.1



TestAmerica Irvine

17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

* C 4 4 0 - 1 7 5 8 4 0 *



1411 ABBEY IN ENVIRONMENTAL SERVICES

Client Information (Sub Contract Lab)		Client Contact: Shipping/Receiving	Company: Aquatic Bioassay	Address: 29 North Olive Street, CA 93001	City: Ventura	State, Zip: CA, 93001	Phone:	Project Name: Boeing NPDES SSFL outfalls	Site:
Sample ID	Sample Name	Lab File Path	Lab Name	Accreditations Required (See note):	Carrier Tracking No(s):	State of Origin:	Page:	COC No:	Job #:
Outfall008_20170207_Comp (440-175840-1)	2/7/17	Urvashi	Urvashi			California	Page 1 of 1	440-107280.1	440-175840-1
Due Date Requested: 2/20/2017					Analysis Requested				
TAT Requested (days):					Field Filtered Sample (Yes or No)				
Perform MS/MSD (Yes or No)					SUB (Chronic-Selenium) Chronic-Selenium				
Sample Identification - Client ID (Lab ID)					Total Number of containers				
Sample Date					Special Instructions/Note:				
Sample Time					Temp. Req. C = 1.44C				
Sample Type (G=Comp, G=grab)					Chlorine (mg/L) = 0				
Preservation Code:					NH3 (mg/L) = 0				
Matrix (W=water, S=solid, O=matrix/other)									
Water									
X									
6									

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontracted laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: <i>Urvashi</i>	Date/Time: 2/8/16 12:00	Company: <i>TAI</i>	Received by: <i>Felix</i>	Date/Time: 2/8/16 12:00	Company: _____
Relinquished by: _____	Date/Time: _____	Company: _____	Received by: <i>Smith</i>	Date/Time: 2/4/17 1:04	Company: _____

Custody Seals Intact: Yes No Custody Seal No: _____
Cooler Temperature(s) °C and Other Remarks: _____

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017


STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria	

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:			
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab			
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



TestAmerica Irvine
 17461 Deegan Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica



JOB No
 140-107284.1
 Page
 Page 1 of 1

Lab #
 440-175840-1

Client Contact
 Patel, Urvashi
 E-Mail
 urvashi.patel@testam.com
 Shipping/Receiving
 TestAmerica Laboratories, Inc.
 Address
 13715 Rider Trail North,
 City
 Earth City
 State, Zip
 MO, 63045
 Phone
 314-298-8566(Tel) 314-298-8757(Fax)
 Email

Due Date Requested:
 2/17/2017
 TAT Requested (days):
 0
 IFO #
 WO #
 Project #
 44009873
 Site
 55QWR

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Other)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of Containers	Special Instructions/Note
Outfall008_20170207_Comp (440-175840-1)	2/7/17	08:15 Pacific	Water	Water		X	X	901.1, CuFill, Geo, K-40 and Cesium-137	2	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Outfall008_20170207_Comp (440-175840-1MS)	2/7/17	08:15 Pacific	MS	Water		X	X	904.0, PresSep, 0 Radium-226	2	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Outfall008_20170207_Comp (440-175840-1MSD)	2/7/17	08:15 Pacific	MSD	Water		X	X	903.0, PresSep, 21 Radium-226	2	Boeing SSFL; DO NOT FILTER; use prep date from preservation

Accreditations Requested (See Note)
 M - Hexane
 N - None
 O - Al4H4O2
 P - Na2O4S
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecylphosphine
 U - Acetone
 V - MCAA
 W - pH 4-5
 X - EDTA
 Y - EDA
 Z - other (specify)

Note: Some laboratory accreditations are subject to change. TestAmerica Laboratories, Inc. places the ownership of method, analysis & accreditation completed upon our subcontract laboratories. The sample shipment is forwarded under chain of custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/discipline being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody arising to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2

Relinquished by	Date	Company	Received by	Date/Time	Company	Minut of Shipment
W. B. S. S. S.	2/8/17	TAI	FedEx	2/8/17 17:00	Company	
FED EX			M. S. S. S.	2/9/17 09:00	Company	



Custody Seal No.: _____
 Custody Seals Intact:
 A Yes A No



Chain of Custody Record

* C 4 4 0 - 1 7 5 8 4 0 *

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Carrier Tracking No(s):	
Client Contact: urvashti.patel@testamericainc.com		E-Mail: urvashti.patel@testamericainc.com		State of Origin: California	
Shipping/Receiving Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Page: Page 1 of 1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 2/17/2017		Job #: 440-175840-1	
City: West Sacramento		TAT Requested (days):		Preservation Codes:	
State, Zip: CA, 95605		PO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		WO #:		M - Hexane N - None O - AshtO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Email:		Project #:		Special Instructions/Note:	
Project Name: Boeing NPDES SSFL outfalls		SSON#:			
Sample Identification - Client ID (Lab ID)		Sample Date		Total Number of Containers	
Outfall008_20170207_Comp (440-175840-1)		2/7/17		2	
Outfall008_20170207_Comp_Extra (440-175840-3)		2/7/17		2	
Sample Time		Sample Time		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
08:15 Pacific		08:15 Pacific		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
08:15 Pacific		08:15 Pacific		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Sample Type (C=Comp, G=grab)		Sample Type (C=Comp, G=grab)		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Water		Water		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Water		Water		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Matrix (W=water, S=solid, O=organic, A=air)		Matrix (W=water, S=solid, O=organic, A=air)		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Water		Water		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Water		Water		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Field Filtered Sample (Yes or No)		Field Filtered Sample (Yes or No)		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
X		X		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Perform MS/MSD (Yes or No)		Perform MS/MSD (Yes or No)		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
X		X		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
1613B/1613B_Sox_Sep_P Standard List w/ Totals		1613B/1613B_Sox_Sep_P Standard List w/ Totals		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
Barcode: 		Barcode: 		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
440-175840 Chain of Custody		440-175840 Chain of Custody		See QAS, Boeing_wiu to zero, ugl., Use Boeing glassware.	
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2					
Empty Kit Relinquished by: Vu Bandy Date: 2/8/17 17:00 Company: TAWS					
Relinquished by: Vu Bandy Date/Time: 2/8/17 17:00 Company: TAWS					
Relinquished by: Vu Bandy Date/Time: 2/8/17 17:00 Company: TAWS					
Relinquished by: Vu Bandy Date/Time: 2/8/17 17:00 Company: TAWS					
Custody Seals Intact: Δ Yes Δ No					
Custody Seal No.: 1-8					
Cooler Temperature(s) °C and Other Remarks:					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175840-1

Login Number: 175840

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175840-1

Login Number: 175840

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 02/09/17 05:33 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-175840-1	Outfall008_20170207_Comp		68		67		82		70
440-175840-1 - RA	Outfall008_20170207_Comp				62				
MB 320-150514/1-A	Method Blank		66		65		75		67
MB 320-150514/1-A - RA	Method Blank				61				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-175840-1	Outfall008_20170207_Comp		81		81		89		80
440-175840-1 - RA	Outfall008_20170207_Comp								
MB 320-150514/1-A	Method Blank		76		78		82		75
MB 320-150514/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-175840-1	Outfall008_20170207_Comp		82		73		83	80	
440-175840-1 - RA	Outfall008_20170207_Comp								
MB 320-150514/1-A	Method Blank		76		66		78	73	
MB 320-150514/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-175840-1	Outfall008_20170207_Comp		81		80		84
440-175840-1 - RA	Outfall008_20170207_Comp						
MB 320-150514/1-A	Method Blank		75		74		75
MB 320-150514/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-150514/2-A	Lab Control Sample	72	70	83	74	82	81	84	80
LCSD 320-150514/3-A	Lab Control Sample Dup	63	62	76	67	76	78	84	77

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-150514/2-A	Lab Control Sample	80	71	81	80	80	81	84
LCSD 320-150514/3-A	Lab Control Sample Dup	79	67	78	75	77	76	78

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175840-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 14, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-175840-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170207_ Comp	440-175840-1	N/A	Water	2/7/2017 8:15:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175840-2:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issues were noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.
- COC and sample condition upon receipt was not provided in the data package for the radiochemistry at TA-St. Louis.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 14, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha and Radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for gross alpha and Radium-226 were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of total uranium. Total uranium was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were performed on the sample in this SDG for total uranium, gross alpha, gross beta, radium-226, radium-228, strontium-90 and tritium. All recoveries and RPDs were within the laboratory control limits.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Results reported below the reporting limit but above the MDC were qualified as estimated (J) and coded with a DNQ to comply with the NPDES permit. Reported nondetects are valid to the MDC.



III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401758402

Analysis Method E900

Sample Name Outfall008_20170207_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 8:15:00 AM Validation Level: 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.992	1.14	3.00	1.86	pCi/L	U	U	*III
Gross Beta Analytes	GROSSBETA	2.81	0.844	4.00	1.02	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall008_20170207_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 8:15:00 AM Validation Level: 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	0.483	8.30	20.0	14.9	pCi/L	U	U	
Potassium-40	13966-00-2	-64.6	160	215	215	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall008_20170207_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 8:15:00 AM Validation Level: 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.110	0.161	1.00	0.275	pCi/L	U	U	*III

Analysis Method E904.0

Sample Name Outfall008_20170207_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 8:15:00 AM Validation Level: 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.00442	0.271	1.00	0.478	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.236	0.219	3.00	0.353	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-40.5	184	500	334	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.246	0.181	1.00	0.183	pCi/L		U	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175840-2

Client Project/Site: Routine Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 9:46:17 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

- 1
- 2
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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 9:46:17 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175840-1	Outfall008_20170207_Comp	Water	02/07/17 08:15	02/07/17 15:10

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Job ID: 440-175840-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175840-2

Comments

No additional comments.

Receipt

The samples were received on 2/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.6° C, 1.7° C, 2.5° C, 2.7° C and 3.1° C.

RAD

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-292776

The following samples were removed from the batch due to the lack of formation of a precipitate following the addition of fuming nitrate in the into-ingrowth process. The sample was re-precipitated in prep batch: 160-293923.

Outfall008_20170207_Comp (440-175840-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.992	U	1.14	1.14	3.00	1.86	pCi/L	03/03/17 08:15	03/10/17 11:51	1
Gross Beta	2.81		0.796	0.844	4.00	1.02	pCi/L	03/03/17 08:15	03/10/17 11:51	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.483	U	8.30	8.30	20.0	14.9	pCi/L	02/10/17 14:45	02/13/17 19:36	1
Potassium-40	-64.6	U	160	160		215	pCi/L	02/10/17 14:45	02/13/17 19:36	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.110	U	0.161	0.161	1.00	0.275	pCi/L	02/13/17 11:24	03/07/17 06:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.1		40 - 110					02/13/17 11:24	03/07/17 06:01	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00442	U	0.271	0.271	1.00	0.478	pCi/L	02/13/17 12:05	03/06/17 14:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.1		40 - 110					02/13/17 12:05	03/06/17 14:12	1
Y Carrier	91.2		40 - 110					02/13/17 12:05	03/06/17 14:12	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.236	U	0.218	0.219	3.00	0.353	pCi/L	02/22/17 11:07	03/02/17 15:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.8		40 - 110					02/22/17 11:07	03/02/17 15:50	1
Y Carrier	97.6		40 - 110					02/22/17 11:07	03/02/17 15:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-40.5	U	184	184	500	334	pCi/L	02/23/17 10:45	02/24/17 20:52	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.246		0.180	0.181	1.00	0.183	pCi/L	02/21/17 13:19	02/24/17 17:20	1

- 1
- 2
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- 9
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- 11
- 12
- 13
- 14

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	295726	03/03/17 08:15	MRB	TAL SL
Total/NA	Analysis	900.0		1			297171	03/10/17 11:51	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	291958	02/10/17 14:45	JDL	TAL SL
Total/NA	Analysis	901.1		1			292009	02/13/17 19:36	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.16 mL	1.0 g	292028	02/13/17 11:24	MBC	TAL SL
Total/NA	Analysis	903.0		1			296226	03/07/17 06:01	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.16 mL	1.0 g	292032	02/13/17 12:05	MBC	TAL SL
Total/NA	Analysis	904.0		1			296097	03/06/17 14:12	ALD	TAL SL
Total/NA	Prep	PrecSep-7			999.94 mL	1.0 g	293923	02/22/17 11:07	BME	TAL SL
Total/NA	Analysis	905		1			295372	03/02/17 15:50	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	294253	02/23/17 10:45	JDL	TAL SL
Total/NA	Analysis	906.0		1			294715	02/24/17 20:52	MLK	TAL SL
Total/NA	Prep	ExtChrom			499.90 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294623	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-295726/1-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295726

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.4199	U	0.555	0.558	3.00	1.19	pCi/L	03/03/17 08:15	03/10/17 11:51	1
Gross Beta	-0.3095	U	0.536	0.537	4.00	1.00	pCi/L	03/03/17 08:15	03/10/17 11:51	1

Lab Sample ID: LCS 160-295726/2-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	47.25		6.90	3.00	1.82	pCi/L	95	73 - 133

Lab Sample ID: LCSB 160-295726/3-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	90.52		9.60	4.00	1.13	pCi/L	99	75 - 125

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.992	U	49.9	40.06		6.01	3.00	1.64	pCi/L	80	60 - 140

Lab Sample ID: 440-175840-1 MSBT
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	2.81		91.0	92.89		9.82	4.00	0.991	pCi/L	99	60 - 140

Lab Sample ID: 440-175840-1 MSBTD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Beta	2.81		91.0	93.16		9.85	4.00	0.971	pCi/L	99	60 - 140	0.01	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	0.992	U	49.9	30.30		4.78	3.00	1.56	pCi/L	61	60 - 140	0.90	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-291958/1-A
Matrix: Water
Analysis Batch: 292041

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 291958

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	4.657	U	8.16	8.17	20.0	13.8	pCi/L	02/10/17 14:45	02/13/17 08:57	1
Potassium-40	23.76	U	127	127		185	pCi/L	02/10/17 14:45	02/13/17 08:57	1

Lab Sample ID: LCS 160-291958/2-A
Matrix: Water
Analysis Batch: 292041

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 291958

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	137000		15800		439	pCi/L	100	90 - 111
Cesium-137	47000	47960		4770	20.0	141	pCi/L	102	90 - 111
Cobalt-60	39800	39410		3890		103	pCi/L	99	89 - 110

Lab Sample ID: 440-175633-U-1-H DU
Matrix: Water
Analysis Batch: 292011

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 291958

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	6.01	U	0.1070	U	10.7	20.0	19.5	pCi/L		0.28	1
Potassium-40	52.0	U	-15.17	U	164		238	pCi/L		0.26	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292028/1-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292028

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.09280	U	0.162	0.162	1.00	0.285	pCi/L	02/13/17 11:24	03/07/17 06:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					02/13/17 11:24	03/07/17 06:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292028/2-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	10.97		1.36	1.00	0.265	pCi/L	97	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	90.9		40 - 110							

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.110	U	11.3	10.98		1.43	1.00	0.316	pCi/L	97	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	70.8		40 - 110								

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.110	U	11.3	11.35		1.46	1.00	0.326	pCi/L	101	75 - 138	0.13	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	72.0		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292032/1-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292032

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1981	U	0.244	0.245	1.00	0.404	pCi/L	02/13/17 12:05	03/06/17 14:13	1
Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	87.3		40 - 110	02/13/17 12:05	03/06/17 14:13	1				
Y Carrier	87.1		40 - 110	02/13/17 12:05	03/06/17 14:13	1				

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-292032/2-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits												
Radium-228	13.8	14.29		1.52	1.00	0.344	pCi/L	104	56 - 140												
<table border="1" style="width: 100%;"> <thead> <tr> <th>Carrier</th> <th>LCS %Yield</th> <th>LCS Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Ba Carrier</td> <td>90.9</td> <td></td> <td>40 - 110</td> </tr> <tr> <td>Y Carrier</td> <td>96.1</td> <td></td> <td>40 - 110</td> </tr> </tbody> </table>										Carrier	LCS %Yield	LCS Qualifier	Limits	Ba Carrier	90.9		40 - 110	Y Carrier	96.1		40 - 110
Carrier	LCS %Yield	LCS Qualifier	Limits																		
Ba Carrier	90.9		40 - 110																		
Y Carrier	96.1		40 - 110																		

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits												
Radium-228	0.00442	U	13.8	15.32		1.69	1.00	0.503	pCi/L	111	45 - 150												
<table border="1" style="width: 100%;"> <thead> <tr> <th>Carrier</th> <th>MS %Yield</th> <th>MS Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Ba Carrier</td> <td>70.8</td> <td></td> <td>40 - 110</td> </tr> <tr> <td>Y Carrier</td> <td>92.3</td> <td></td> <td>40 - 110</td> </tr> </tbody> </table>												Carrier	MS %Yield	MS Qualifier	Limits	Ba Carrier	70.8		40 - 110	Y Carrier	92.3		40 - 110
Carrier	MS %Yield	MS Qualifier	Limits																				
Ba Carrier	70.8		40 - 110																				
Y Carrier	92.3		40 - 110																				

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit												
Radium-228	0.00442	U	13.7	15.21		1.67	1.00	0.504	pCi/L	111	45 - 150	0.03	1												
<table border="1" style="width: 100%;"> <thead> <tr> <th>Carrier</th> <th>MSD %Yield</th> <th>MSD Qualifier</th> <th>Limits</th> </tr> </thead> <tbody> <tr> <td>Ba Carrier</td> <td>72.0</td> <td></td> <td>40 - 110</td> </tr> <tr> <td>Y Carrier</td> <td>92.0</td> <td></td> <td>40 - 110</td> </tr> </tbody> </table>														Carrier	MSD %Yield	MSD Qualifier	Limits	Ba Carrier	72.0		40 - 110	Y Carrier	92.0		40 - 110
Carrier	MSD %Yield	MSD Qualifier	Limits																						
Ba Carrier	72.0		40 - 110																						
Y Carrier	92.0		40 - 110																						

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-293923/1-A
Matrix: Water
Analysis Batch: 295361

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293923

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac																					
Strontium-90	0.1193	U	0.182	0.183	3.00	0.306	pCi/L	02/22/17 11:07	03/02/17 15:45	1																					
<table border="1" style="width: 100%;"> <thead> <tr> <th>Carrier</th> <th>MB %Yield</th> <th>MB Qualifier</th> <th>Limits</th> <th>Prepared</th> <th>Analyzed</th> <th>Dil Fac</th> </tr> </thead> <tbody> <tr> <td>Sr Carrier</td> <td>86.8</td> <td></td> <td>40 - 110</td> <td>02/22/17 11:07</td> <td>03/02/17 15:45</td> <td>1</td> </tr> <tr> <td>Y Carrier</td> <td>95.3</td> <td></td> <td>40 - 110</td> <td>02/22/17 11:07</td> <td>03/02/17 15:45</td> <td>1</td> </tr> </tbody> </table>											Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac	Sr Carrier	86.8		40 - 110	02/22/17 11:07	03/02/17 15:45	1	Y Carrier	95.3		40 - 110	02/22/17 11:07	03/02/17 15:45	1
Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac																									
Sr Carrier	86.8		40 - 110	02/22/17 11:07	03/02/17 15:45	1																									
Y Carrier	95.3		40 - 110	02/22/17 11:07	03/02/17 15:45	1																									

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-293923/2-A
Matrix: Water
Analysis Batch: 295361

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293923

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.390		0.871	3.00	0.284	pCi/L	99	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.0		40 - 110						
Y Carrier	95.7		40 - 110						

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 295372

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 293923

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.236	U	8.50	8.480		1.00	3.00	0.471	pCi/L	100	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	50.0		40 - 110								
Y Carrier	96.1		40 - 110								

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 295372

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 293923

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.236	U	8.49	8.122		0.958	3.00	0.464	pCi/L	96	19 - 150	0.18	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	52.8		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-294253/1-A
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294253

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-99.55	U	178	179	500	335	pCi/L	02/23/17 10:45	02/24/17 16:42	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-294253/2-A
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2919		455	500	336	pCi/L	99	74 - 114

Lab Sample ID: 440-175633-V-1-B MS
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-118	U	2950	3131		482	500	352	pCi/L	106	67 - 130

Lab Sample ID: 440-175633-V-1-C MSD
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-118	U	2950	2811		441	500	328	pCi/L	95	67 - 130	0.35	1

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-40.5	U	2950	3144		481	500	348	pCi/L	107	67 - 130

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-40.5	U	2950	2950		458	500	336	pCi/L	100	67 - 130	0.21	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120		
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121		
		LCS	LCS								
Tracer	%Yield	Qualifier	Limits								
Uranium-232	85.9		30 - 110								

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146	
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143	
		MS	MS									
Tracer	%Yield	Qualifier	Limits									
Uranium-232	88.1		30 - 110									

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146	0.01	1	
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1	
		MSD	MSD											
Tracer	%Yield	Qualifier	Limits											
Uranium-232	87.1		30 - 110											

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146		
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143		
		MS	MS										
Tracer	%Yield	Qualifier	Limits										
Uranium-232	96.2		30 - 110										

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER
	Result	Qual		Result	Qual						Limits	RER	
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1
		<i>MSD MSD</i>											
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>										
Uranium-232	82.1		30 - 110										

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER
	Result	Qual		Result	Qual						Limits	RER	
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146		
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143		
		<i>MS MS</i>											
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>										
Uranium-232	66.9		30 - 110										

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER
	Result	Qual		Result	Qual						Limits	RER	
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1
		<i>MSD MSD</i>											
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>										
Uranium-232	85.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Rad

Prep Batch: 291958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-291958/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-291958/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-175633-U-1-H DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	PrecSep-21	
MB 160-292028/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292028/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	PrecSep-21	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	PrecSep-21	

Prep Batch: 292032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	PrecSep_0	
MB 160-292032/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292032/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	PrecSep_0	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	PrecSep_0	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	ExtChrom	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 293923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	PrecSep-7	
MB 160-293923/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-293923/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	PrecSep-7	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 294253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-294253/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-294253/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-175633-V-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-175633-V-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	LSC_Dist_Susp	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Rad (Continued)

Prep Batch: 295726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total/NA	Water	Evaporation	
MB 160-295726/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-295726/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-295726/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-175840-1 MS	Outfall008_20170207_Comp	Total/NA	Water	Evaporation	
440-175840-1 MSBT	Outfall008_20170207_Comp	Total/NA	Water	Evaporation	
440-175840-1 MSBTD	Outfall008_20170207_Comp	Total/NA	Water	Evaporation	
440-175840-1 MSD	Outfall008_20170207_Comp	Total/NA	Water	Evaporation	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.



CHAIN OF CUSTODY FORM

Test America

440-175840 Chain of Custody

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [008] Outfall 008 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.598.0702 (cell)		ANALYSIS REQUIRED Total Recoverable Metals: Mercury (E245.1) Cyanide (SM4500-CNE / E335.2) Ammonia-N (350.2) Chronic Toxicity - Selenium (EPA-821-R-02-013) 40, CS-137 (E901.0 or E901.1) Combined Radium 226 (E903.0 or E903.1) & Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Gross Alpha (E900.0), Gross Beta (E900.0), (E200.7): Ni, Zn Total Dissolved Metals: (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl TDS (SM2540C/E160.1) Perchlorate (300) Cr, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, TCDD (and all congeners) (E1613B) (E200.7): Ni, Zn (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl Total Recoverable Metals:		Field Readings Comments 48 hours Holding Time NO3 & NO2 Unfiltered and unpreserved analysis, Separate RAD onto another workorder. Analyze duplicate, not MSMSD. Only test if first or second rain events of the year Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Hold Hold		
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	Vol Cont	Preservative	Bottle #	MS/MSD	Date/Time	
Outfall008_20170207_Comp		2/7/2017 / 0815	WM	500 mL Poly	3	HNO3	95	Yes	Received By	Date/Time
Outfall008		2/7/2017 / 0815	WM	1 L Glass Amber	2	None	110	No	Received By	Date/Time
		2/7/2017 / 0815	WM	500 mL Poly	6	None	130	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	500 mL Poly	1	None	155	No	Received By	Date/Time
		2/7/2017 / 0815	WM	500 mL Poly	3	H2SO4	160	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	500 mL Poly	3	NaOH	220	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	2.5 Gal Cube	3	None	225	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	1 L Glass Amber	3	None	230	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	1 Gal Cube	6	None	235	No	Received By	Date/Time
		2/7/2017 / 0815	WM	borosilicate vials	3	HNO3	315	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	1 L Poly	3	None	205	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	borosilicate vials	3	None	320	Yes	Received By	Date/Time
		2/7/2017 / 0815	WM	1 L Glass Amber	2	None	110	No	Received By	Date/Time
		2/7/2017 / 0815	WM	500 mL Poly	2	None	130	No	Received By	Date/Time

Turn-around time: (Check)
 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X
 48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity: (Check)
 Intact: ___ On Ice: ___
 Store samples for 6 months.
 Data Requirements: (Check)
 No Level IV: ___ All Level IV: ___ X

Received By: *[Signature]* Date/Time: 2/7/17 15:10
 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2/7/17 15:10
 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2/7/17 15:10
 Company: JHA

Handwritten notes:
 1.3/1.0 1.4/1.7
 2.4/2.7 2.2/2.5
 2.8/3.1 0.7/1.0
 12-SCU



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175840-2

Login Number: 175840

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175840-2

Login Number: 175840

List Number: 2

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/09/17 03:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-175840-1	Outfall008_20170207_Comp	84.1
440-175840-1 MS	Outfall008_20170207_Comp	70.8
440-175840-1 MSD	Outfall008_20170207_Comp	72.0
LCS 160-292028/2-A	Lab Control Sample	90.9
MB 160-292028/1-A	Method Blank	87.3

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-175840-1	Outfall008_20170207_Comp	84.1	91.2
440-175840-1 MS	Outfall008_20170207_Comp	70.8	92.3
440-175840-1 MSD	Outfall008_20170207_Comp	72.0	92.0
LCS 160-292032/2-A	Lab Control Sample	90.9	96.1
MB 160-292032/1-A	Method Blank	87.3	87.1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-175840-1	Outfall008_20170207_Comp	72.8	97.6
440-175840-1 MS	Outfall008_20170207_Comp	50.0	96.1
440-175840-1 MSD	Outfall008_20170207_Comp	52.8	97.2
LCS 160-293923/2-A	Lab Control Sample	87.0	95.7
MB 160-293923/1-A	Method Blank	86.8	95.3

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-E MS	Matrix Spike	88.1
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1
440-175840-1 MS	Outfall008_20170207_Comp	96.2

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175840-1 MSD	Outfall008_20170207_Comp	82.1
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175840-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 19, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-175840-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170207_ Comp	440-175840-1	N/A	Water	2/7/17 8:15 AM	E200.8
Outfall008_20170207_ Comp_F	440-175840-2	N/A	Water	2/7/17 8:15 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175840-4:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. METHODS 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 19, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall008_20170207_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis approximately 43 hours after receipt. The dissolved metals results from this sample were qualified as estimated (J).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the analytes were within NFG control limits of 90-110%.

It should be noted that the calibration for zinc associated with sample Outfall008_20170207_Comp_F presented in the original data package for this SDG did not meet calibration acceptance criteria, and the reported result could not be verified. The laboratory reanalyzed sample Outfall008_20170207_Comp_F under a new calibration for zinc, with acceptable results. This data was reported in revision 3 of the SDG and was reviewed for this report.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results, with the following exceptions. Zinc (7.88 $\mu\text{g/L}$) and nickel (1.13 $\mu\text{g/L}$) were detected below the reporting limit in CCBs bracketing analysis of sample Outfall008_20170207_Comp. Associated detected sample results were less than the RL and were qualified as nondetects (U) at the reporting limit.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall008_20170207_Comp and Outfall008_20170207_Comp_F for method 200.8. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401758404

Analysis Method E200.8

Sample Name Outfall008_20170207_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	1.5	10	0.50	ug/L	J,DX	U	B
Zinc	T	7440-66-6	11	20	2.5	ug/L	J,DX	U	B

Sample Name Outfall008_20170207_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/7/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175840-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	2.0	10	0.50	ug/L	J,DXQP	J	DNQ,H
Zinc	D	7440-66-6	17	20	2.5	ug/L	J,DXQP	J	DNQ, H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175840-4

Client Project/Site: Routine Outfall 008 Comp

Revision: 2

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/15/2017 5:32:36 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/15/2017 5:32:36 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175840-1	Outfall008_20170207_Comp	Water	02/07/17 08:15	02/07/17 15:10
440-175840-2	Outfall008_20170207_Comp_F	Water	02/07/17 08:15	02/07/17 15:10

- 1
- 2
- 3
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- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Job ID: 440-175840-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175840-4

Comments

see below for reasons for revised reports

Receipt

The samples were received on 2/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.6° C, 1.7° C, 2.5° C, 2.7° C and 3.1° C.

Receipt Exceptions

Rev1-

The 200.8 method need the 200.7 RL for Ni and it was missed.

Rev 2-

Client wants review of the ICAL because its not reproducible to the validator.

leve IV is still missing data- request came through data validator. this will be 2nd revision.

Level IV is missing ICSAB for metals.

Poor calibration for 1st run so 2nd run will be reported.

Metals

Method(s) 200.8: Upon a close inspection of the calibration curve for Zinc in the original run, it was discovered that the calibration is less than acceptable. Therefore, Zinc has been reported from a reanalysis.

Outfall008_20170207_Comp_F (440-175840-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Client Sample ID: Outfall008_20170207_Comp

Date Collected: 02/07/17 08:15

Date Received: 02/07/17 15:10

Lab Sample ID: 440-175840-1

Matrix: Water

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	1.5	J,DX	10	0.50	ug/L		02/15/17 10:03	02/16/17 15:22	1
Zinc	11	J,DX	20	2.5	ug/L		02/15/17 10:03	02/16/17 15:22	1

Client Sample ID: Outfall008_20170207_Comp_F

Date Collected: 02/07/17 08:15

Date Received: 02/07/17 15:10

Lab Sample ID: 440-175840-2

Matrix: Water

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	2.0	J,DX QP	10	0.50	ug/L		02/14/17 15:18	02/15/17 14:07	1
Zinc	17	J,DX QP	20	2.5	ug/L		02/14/17 15:18	03/30/17 09:53	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Client Sample ID: Outfall008_20170207_Comp

Lab Sample ID: 440-175840-1

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	388401	02/15/17 10:03	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1			388766	02/16/17 15:22	RC	TAL IRV

Client Sample ID: Outfall008_20170207_Comp_F

Lab Sample ID: 440-175840-2

Date Collected: 02/07/17 08:15

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387421	02/09/17 10:24	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388238	02/14/17 15:18	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388493	02/15/17 14:07	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	387421	02/09/17 10:24	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388238	02/14/17 15:18	K1E	TAL IRV
Dissolved	Analysis	200.8		1			397136	03/30/17 09:53	IH1	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-388401/1-A
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 388401

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	0.50	ug/L		02/15/17 10:03	02/16/17 15:17	1
Zinc	ND		20	2.5	ug/L		02/15/17 10:03	02/16/17 15:17	1

Lab Sample ID: LCS 440-388401/2-A
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 388401

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	76.3		ug/L		95	85 - 115
Zinc	80.0	82.4		ug/L		103	85 - 115

Lab Sample ID: 440-175840-1 MS
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total Recoverable
Prep Batch: 388401

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	1.55		80.0	75.2		ug/L		92	70 - 130
Zinc	11.5		80.0	87.0		ug/L		94	70 - 130

Lab Sample ID: 440-175840-1 MSD
Matrix: Water
Analysis Batch: 388766

Client Sample ID: Outfall008_20170207_Comp
Prep Type: Total Recoverable
Prep Batch: 388401

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nickel	1.55		80.0	76.1		ug/L		93	70 - 130	1	20
Zinc	11.5		80.0	85.3		ug/L		92	70 - 130	2	20

Lab Sample ID: MB 440-387421/1-D
Matrix: Water
Analysis Batch: 388493

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388238

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	0.50	ug/L		02/14/17 15:18	02/15/17 14:04	1

Lab Sample ID: MB 440-387421/1-D
Matrix: Water
Analysis Batch: 397136

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388238

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/14/17 15:18	03/30/17 09:49	1

Lab Sample ID: LCS 440-387421/2-D
Matrix: Water
Analysis Batch: 388493

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388238

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	80.9		ug/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-387421/2-D
Matrix: Water
Analysis Batch: 397136

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388238

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	81.8		ug/L		102	85 - 115

Lab Sample ID: 440-175840-2 MS
Matrix: Water
Analysis Batch: 388493

Client Sample ID: Outfall008_20170207_Comp_F
Prep Type: Dissolved
Prep Batch: 388238

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	1.99		80.0	81.2		ug/L		99	70 - 130

Lab Sample ID: 440-175840-2 MS
Matrix: Water
Analysis Batch: 397136

Client Sample ID: Outfall008_20170207_Comp_F
Prep Type: Dissolved
Prep Batch: 388238

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	17	J,DX QP	80.0	91.5		ug/L		93	70 - 130

Lab Sample ID: 440-175840-2 MSD
Matrix: Water
Analysis Batch: 388493

Client Sample ID: Outfall008_20170207_Comp_F
Prep Type: Dissolved
Prep Batch: 388238

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	1.99		80.0	78.8		ug/L		96	70 - 130	3	20

Lab Sample ID: 440-175840-2 MSD
Matrix: Water
Analysis Batch: 397136

Client Sample ID: Outfall008_20170207_Comp_F
Prep Type: Dissolved
Prep Batch: 388238

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	17	J,DX QP	80.0	94.3		ug/L		97	70 - 130	3	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Metals

Filtration Batch: 387421

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	FILTRATION	
MB 440-387421/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	FILTRATION	
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 388238

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	200.2	387421
MB 440-387421/1-D	Method Blank	Dissolved	Water	200.2	387421
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	200.2	387421
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	200.2	387421
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	200.2	387421

Prep Batch: 388401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total Recoverable	Water	200.2	
MB 440-388401/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-388401/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175840-1 MS	Outfall008_20170207_Comp	Total Recoverable	Water	200.2	
440-175840-1 MSD	Outfall008_20170207_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 388493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238
MB 440-387421/1-D	Method Blank	Dissolved	Water	200.8	388238
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	200.8	388238
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238

Analysis Batch: 388766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-1	Outfall008_20170207_Comp	Total Recoverable	Water	200.8	388401
MB 440-388401/1-A	Method Blank	Total Recoverable	Water	200.8	388401
LCS 440-388401/2-A	Lab Control Sample	Total Recoverable	Water	200.8	388401
440-175840-1 MS	Outfall008_20170207_Comp	Total Recoverable	Water	200.8	388401
440-175840-1 MSD	Outfall008_20170207_Comp	Total Recoverable	Water	200.8	388401

Analysis Batch: 397136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-2	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238
MB 440-387421/1-D	Method Blank	Dissolved	Water	200.8	388238
LCS 440-387421/2-D	Lab Control Sample	Dissolved	Water	200.8	388238
440-175840-2 MS	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238
440-175840-2 MSD	Outfall008_20170207_Comp_F	Dissolved	Water	200.8	388238

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-175840-4

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175840-4

Login Number: 175840

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177321-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177321-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170217_ Grab	440-177321-1	N/A	Water	2/17/17 9:55 AM	E1664, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177321-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Analysis for Human Bacteroidetes was subcontracted to Source Molecular. No COC or sample receipt information for this shipment was provided in the data package.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS METHODS — GENERAL MINERALS

Marcia Hilchey of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A Standard Method for the Examination of Water and Wastewater 9221F, SAM348-357 (Human Bacteroides by Quantitative PCR)* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The subcontract laboratory received the sample for Human Bacteroides analysis after the holding time requirement (24-48 hours); therefore, the result for this analysis was qualified as estimated (UJ). The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was ≤11%.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773211

Analysis Method *DHC qPCR*

Sample Name Outfall008_20170217_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 9:55:00 AM **Validation Level:** 8

Lab Sample Name: SM-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	absent			CEs/100	U	UJ	H

Analysis Method *E1664*

Sample Name Outfall008_20170217_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 9:55:00 AM **Validation Level:** 8

Lab Sample Name: 440-177321-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREASE	ND	5.3	1.5	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177321-1

Client Project/Site: Routine Outfall 008 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/27/2017 9:31:41 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/27/2017 9:31:41 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177321-1	Outfall008_20170217_Grab	Water	02/17/17 09:55	02/17/17 19:50

1

2

3

4

5

6

7

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Job ID: 440-177321-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177321-1

Comments

No additional comments.

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390456 and analytical batch 440-390532. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Client Sample ID: Outfall008_20170217_Grab

Lab Sample ID: 440-177321-1

Date Collected: 02/17/17 09:55

Matrix: Water

Date Received: 02/17/17 19:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		02/24/17 15:25	02/25/17 05:04	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Client Sample ID: Outfall008_20170217_Grab

Lab Sample ID: 440-177321-1

Date Collected: 02/17/17 09:55

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			945 mL	1000 mL	390456	02/24/17 15:25	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390532	02/25/17 05:04	BAW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390456/1-A
Matrix: Water
Analysis Batch: 390532

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390456

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/24/17 15:25	02/25/17 05:04	1

Lab Sample ID: LCS 440-390456/2-A
Matrix: Water
Analysis Batch: 390532

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	35.4		mg/L		89	78 - 114

Lab Sample ID: LCSD 440-390456/3-A
Matrix: Water
Analysis Batch: 390532

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390456

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.3		mg/L		91	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

General Chemistry

Prep Batch: 390456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177321-1	Outfall008_20170217_Grab	Total/NA	Water	1664A	
MB 440-390456/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390456/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390456/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177321-1	Outfall008_20170217_Grab	Total/NA	Water	1664A	390456
MB 440-390456/1-A	Method Blank	Total/NA	Water	1664A	390456
LCS 440-390456/2-A	Lab Control Sample	Total/NA	Water	1664A	390456
LCSD 440-390456/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390456

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Grab

TestAmerica Job ID: 440-177321-1

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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CHAIN OF CUSTODY FORM

EDBRTG UX

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 008 Grab</p>		<p>Field Readings (Include units) Time of Readings: 1945U DO 0.23 mg/L pH 8.23 pH unit Temp 14.54 19.9F TBC</p>		<p>Meter serial #</p>		
<p>Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Test America's services under this CoC shall be performed in accordance with the TBCs, within Blanket Service Agreement# 2015-18, Test America by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories Inc.</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p>		<p>Field readings QC Checked by: <i>[Signature]</i> Date/Time: 2/17/17</p>		
<p>Sampler: Dan Smith</p>		<p>Field Manager: Mark Dornirick 818.350.7312, 818.599.0702 (cell)</p>		<p>Oil & Grease (E1684-HEM)</p>		<p>Comments 2 2</p>		
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 008	Outfall008_20170217_Grab	2/17/2017 10:45	WM	1 L Glass Amber	2	HCl	15	No
	Outfall008_20170217_Grab_Extra	2/17/2017 10:45	WM	1 L Glass Amber	2	HCl	15	No
 440-177321 Chain of Custody								
Relinquished By: <i>[Signature]</i>	Date/Time: 2/17/17	Company: SHIA	Received By: <i>[Signature]</i>	Date/Time: 2/17/17 1630	Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X 48 Hour: ___ 5 Day: ___ Normal: ___			
Relinquished By: <i>[Signature]</i>	Date/Time: 2-17-17 1450	Company:	Received By: <i>[Signature]</i>	Date/Time: 2/17/17 1450	Sample Integrity: (Check) Intact: ___ Store samples for 6 months. Data Requirements: (Check) No Level IV: ___ All Level IV: ___ X			



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177321-1

Login Number: 177321

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177397-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MEC^x Project No.:** 1272.003H.01**Sample Delivery Group:** 440-177397-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170218_ Comp	440-177397-1	N/A	Water	2/18/17 9:45 AM	E1613B, E200.8, E245.1, E300, E314.0, SM2540C, SM4500- CN-E, SM4500-NH3G
Outfall008_20170218_ Comp_F	440-177397-2	N/A	Water	2/18/17 9:45 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177397-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine, TA-Denver, and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except TCDD and TCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result above the reporting limit. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall008_20170218_Comp. The result for total



HpCDD was qualified as nondetected (U) at the level of contamination. The reviewer verified that peaks comprising the results for totals HxCDD, HxCDF, and HpCDF in the sample included more peaks than the method blank total. The sample results for totals HxCDD, HxCDF, and HpCDF were therefore qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except those results flagged by the laboratory as EMPC values. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. As 2,3,7,8-TCDF was not detected in the initial analysis of the sample, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals HpCDF, HxCDD, and HxCDF containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8, 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 14, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall008_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 5 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$ for the instrument tune associated with the total metals analyses. Data was not provided for the tune associated with the dissolved metals analyses.

Calibration criteria were met. The initial calibration *r* values (when appropriate) were ≥ 0.995 , *y*-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with the total metals analysis; this review is based on summary data for that CRQL.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total metals analysis; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total metals; this review is based on summary data for that ICSA analysis.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.



V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Method blanks and calibration blanks had no detects.

V.3.2 LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VI. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 300.0, *Standard Methods for the Examination of Water and Wastewater 2540C, 4500-NH3-G and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)



- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were provided by the laboratory.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773971

Analysis Method E1613B

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000059	0.000094	0.00000099	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00012	0.000094	0.00000092	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000049	0.000047	0.00000058	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000015	0.000047	0.00000094	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000056	0.000047	0.00000074	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000055	0.000047	0.00000029	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000047	0.00000069	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000047	0.00000029	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000047	0.00000075	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000035	0.000047	0.00000028	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000082	0.000047	0.00000062	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000047	0.00000046	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000047	0.00000052	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000060	0.000047	0.00000027	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000047	0.00000045	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000094	0.00000031	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000094	0.00000038	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000010	0.000047	0.00000066	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000034	0.000047	0.00000094	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000038	0.000047	0.00000028	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000082	0.000047	0.00000069	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000047	0.00000045	ug/L	U	U	

Analysis Method E1613B

Total Tetrachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000047	0.00000052	ug/L	U	U
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.0000094	0.00000031	ug/L	U	U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000094	0.00000038	ug/L	U	U

Analysis Method E200.8

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.6	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.5	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall008_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	U	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	UJ	H
Copper	D	7440-50-8	1.9	2.0	0.50	ug/L	J,DX	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	UJ	H
Selenium	D	7782-49-2	0.52	2.0	0.50	ug/L	J,DX	J	DNQ, H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	U	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	U	UJ	H

Analysis Method E245.1

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1

Sample Name Outfall008_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.0	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	1.6	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.6	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	3.2	0.50	0.25	mg/L			

Analysis Method E314.0

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method SM2540C

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	110	10	5.0	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method *SM4500-NH3G*

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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Tel: (949)261-1022

TestAmerica Job ID: 440-177397-1

Client Project/Site: Ruoutine Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 4:15:55 PM

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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 4:15:55 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177397-1	Outfall008_20170218_Comp	Water	02/18/17 09:45	02/18/17 18:40
440-177397-2	Outfall008_20170218_Comp_F	Water	02/18/17 09:45	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Job ID: 440-177397-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177397-1

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 1.9° C.

Receipt Exceptions

No additional comments.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Chloride and Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389086 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.0		0.50	0.25	mg/L			02/18/17 21:05	1
Nitrate as N	1.6		0.11	0.055	mg/L			02/18/17 21:05	1
Nitrite as N	ND		0.15	0.070	mg/L			02/18/17 21:05	1
Sulfate	3.2		0.50	0.25	mg/L			02/18/17 21:05	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 16:35	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.6		0.15	0.070	mg/L			03/03/17 11:32	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000094	0.0000003	ug/L		02/27/17 08:20	03/01/17 02:49	1
2,3,7,8-TCDF	ND		0.0000094	0.0000003	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,7,8-PeCDD	ND		0.000047	0.0000005	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,7,8-PeCDF	ND		0.000047	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:49	1
2,3,4,7,8-PeCDF	ND		0.000047	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,4,7,8-HxCDD	ND		0.000047	0.0000006	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,6,7,8-HxCDD	ND		0.000047	0.0000007	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,7,8,9-HxCDD	0.0000082	J,DX q	0.000047	0.0000006	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,4,7,8-HxCDF	0.0000055	J,DX q	0.000047	0.0000002	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,6,7,8-HxCDF	ND		0.000047	0.0000002	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,7,8,9-HxCDF	0.0000035	J,DX MB q	0.000047	0.0000002	ug/L		02/27/17 08:20	03/01/17 02:49	1
2,3,4,6,7,8-HxCDF	0.0000060	J,DX MB	0.000047	0.0000002	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,4,6,7,8-HpCDD	0.000015	J,DX MB	0.000047	0.0000009	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,4,6,7,8-HpCDF	0.0000049	J,DX MB	0.000047	0.0000005	ug/L		02/27/17 08:20	03/01/17 02:49	1
1,2,3,4,7,8,9-HpCDF	0.0000056	J,DX q	0.000047	0.0000007	ug/L		02/27/17 08:20	03/01/17 02:49	1
OCDD	0.00012	MB	0.000094	0.0000009	ug/L		02/27/17 08:20	03/01/17 02:49	1
OCDF	0.0000059	J,DX MB	0.000094	0.0000009	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total TCDD	ND		0.0000094	0.0000003	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total TCDF	ND		0.0000094	0.0000003	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total PeCDD	ND		0.000047	0.0000005	ug/L		02/27/17 08:20	03/01/17 02:49	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDF	ND		0.000047	0.0000004	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total HxCDD	0.00000082	J,DX MB q	0.000047	0.0000006	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total HxCDF	0.00000038	J,DX MB q	0.000047	0.0000002	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total HpCDD	0.0000034	J,DX MB	0.000047	0.0000009	ug/L		02/27/17 08:20	03/01/17 02:49	1
Total HpCDF	0.0000010	J,DX MB q	0.000047	0.0000006	ug/L		02/27/17 08:20	03/01/17 02:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	60		25 - 164				02/27/17 08:20	03/01/17 02:49	1
13C-2,3,7,8-TCDF	62		24 - 169				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,7,8-PeCDD	50		25 - 181				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,7,8-PeCDF	55		24 - 185				02/27/17 08:20	03/01/17 02:49	1
13C-2,3,4,7,8-PeCDF	62		21 - 178				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,6,7,8-HxCDD	65		28 - 130				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,4,7,8-HxCDF	70		26 - 152				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147				02/27/17 08:20	03/01/17 02:49	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,4,6,7,8-HpCDD	49		23 - 140				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143				02/27/17 08:20	03/01/17 02:49	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138				02/27/17 08:20	03/01/17 02:49	1
13C-OCDD	45		17 - 157				02/27/17 08:20	03/01/17 02:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197				02/27/17 08:20	03/01/17 02:49	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:55	1
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:55	1
Copper	2.6		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:55	1
Lead	1.5		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:55	1
Antimony	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:55	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:55	1
Thallium	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:55	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 20:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	110		10	5.0	mg/L			02/23/17 08:39	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 19:02	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Client Sample ID: Outfall008_20170218_Comp_F

Lab Sample ID: 440-177397-2

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/28/17 10:00	03/01/17 11:56	1
Cadmium	ND		1.0	0.25	ug/L		02/28/17 10:00	03/01/17 11:56	1
Copper	1.9	J,DX	2.0	0.50	ug/L		02/28/17 10:00	03/01/17 11:56	1
Lead	ND		1.0	0.50	ug/L		02/28/17 10:00	03/01/17 11:56	1
Antimony	ND		2.0	0.50	ug/L		02/28/17 10:00	03/01/17 11:56	1
Selenium	0.52	J,DX	2.0	0.50	ug/L		02/28/17 10:00	03/01/17 11:56	1
Thallium	ND		1.0	0.50	ug/L		02/28/17 10:00	03/01/17 11:56	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/23/17 23:14	02/25/17 04:10	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			389085	02/18/17 21:05	NTN	TAL IRV
Total/NA	Analysis	300.0		1			389086	02/18/17 21:05	NTN	TAL IRV
Total/NA	Analysis	314.0		1			389485	02/21/17 16:35	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391868	03/03/17 11:32	TLN	TAL IRV
Total/NA	Prep	1613B			1063.7 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B		1			152750	03/01/17 02:49	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:55	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390895	02/27/17 20:12	DB	TAL IRV
Total/NA	Analysis	245.1		1			391252	02/28/17 20:15	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 17:59	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	390502	02/24/17 19:02	EN	TAL IRV

Client Sample ID: Outfall008_20170218_Comp_F

Lab Sample ID: 440-177397-2

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	390193	02/23/17 16:57	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390998	02/28/17 10:00	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			391408	03/01/17 11:56	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	390193	02/23/17 16:57	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390274	02/23/17 23:14	DB	TAL IRV
Dissolved	Analysis	245.1		1			391322	02/25/17 04:10	B1H	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389085/4
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/18/17 13:16	1
Nitrite as N	ND		0.15	0.070	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389085/2
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.09		mg/L		96	90 - 110
Nitrite as N	1.52	1.46		mg/L		96	90 - 110

Lab Sample ID: 440-177360-B-13 MS
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.13		1.13	1.27		mg/L		101	80 - 120
Nitrite as N	ND		1.52	1.59		mg/L		105	80 - 120

Lab Sample ID: 440-177360-B-13 MSD
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.13		1.13	1.26		mg/L		100	80 - 120	1	20
Nitrite as N	ND		1.52	1.59		mg/L		104	80 - 120	0	20

Lab Sample ID: MB 440-389086/4
Matrix: Water
Analysis Batch: 389086

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/18/17 13:16	1
Sulfate	ND		0.50	0.25	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389086/2
Matrix: Water
Analysis Batch: 389086

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.75		mg/L		95	90 - 110
Sulfate	5.00	5.19		mg/L		104	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-389485/3
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 08:57	1

Lab Sample ID: LCS 440-389485/2
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.5		ug/L		102	85 - 115

Lab Sample ID: MRL 440-389485/5
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.92	J,DX	ug/L		98	75 - 125

Lab Sample ID: 440-177165-A-1 MS
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.6		ug/L		110	80 - 120

Lab Sample ID: 440-177165-A-1 MSD
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perchlorate	ND		25.0	27.7		ug/L		111	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,7,8-TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDF	0.00000140	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDF	0.00000112	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,6,7,8-HxCDF	0.000000796	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDD	0.00000372	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDF	0.00000131	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDD	0.0000108	J,DX	0.00010	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDF	0.00000612	J,DX	0.00010	0.0000015	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDD	0.000000537	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDD	0.00000118	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDF	0.00000331	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDD	0.00000696	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDF	0.00000131	J,DX q	0.000050	0.0000012	ug/L		02/27/17 08:20	02/28/17 23:14	1
		MB MB							
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	52		25 - 164				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,7,8-TCDF	53		24 - 169				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDF	45		24 - 185				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,7,8-PeCDF	49		21 - 178				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				02/27/17 08:20	02/28/17 23:14	1
13C-OCDD	35		17 - 157				02/27/17 08:20	02/28/17 23:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Surrogate	MB MB	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD		89		35 - 197	02/27/17 08:20	02/28/17 23:14	1

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000223		ug/L		111	67 - 158
2,3,7,8-TCDF	0.000200	0.000193		ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00120		ug/L		120	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00101		ug/L		101	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100		ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922		ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000968		ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00118	MB	ug/L		118	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000993	MB	ug/L		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000998		ug/L		100	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-1,2,3,7,8-PeCDD	48		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-OCDD	55		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	86		31 - 191

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152230/3-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000235		ug/L		117	67 - 158	5	50
2,3,7,8-TCDF	0.000200	0.000211		ug/L		106	75 - 158	9	50
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	0	50
1,2,3,7,8-PeCDF	0.00100	0.00114	MB	ug/L		114	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000949		ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000959		ug/L		96	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000950		ug/L		95	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106	MB	ug/L		106	78 - 130	1	50
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156	0	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00116	MB	ug/L		116	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122	9	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939		ug/L		94	78 - 138	6	50
OCDD	0.00200	0.00209	MB	ug/L		104	78 - 144	4	50
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	9	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	51		20 - 175
13C-2,3,7,8-TCDF	51		22 - 152
13C-1,2,3,7,8-PeCDD	40		21 - 227
13C-1,2,3,7,8-PeCDF	44		21 - 192
13C-2,3,4,7,8-PeCDF	50		13 - 328
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,6,7,8-HxCDD	52		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-2,3,4,6,7,8-HxCDF	52		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	41		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	47		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	50		20 - 186
13C-OCDD	38		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:44	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Lead	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Antimony	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Thallium	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	75.1		ug/L		94	85 - 115
Cadmium	80.0	73.8		ug/L		92	85 - 115
Copper	80.0	75.2		ug/L		94	85 - 115
Lead	80.0	71.8		ug/L		90	85 - 115
Antimony	80.0	74.8		ug/L		93	85 - 115
Selenium	80.0	74.2		ug/L		93	85 - 115
Thallium	80.0	76.2		ug/L		95	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	79.2		ug/L		99	70 - 130
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130
Copper	4.1		80.0	79.8		ug/L		95	70 - 130
Lead	1.9		80.0	77.1		ug/L		94	70 - 130
Antimony	ND		80.0	73.7		ug/L		92	70 - 130
Selenium	ND		80.0	72.9		ug/L		91	70 - 130
Thallium	ND		80.0	79.3		ug/L		99	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	76.8	BA	ug/L		96	70 - 130	200	20
Cadmium	ND		80.0	75.1	BA	ug/L		94	70 - 130	200	20
Copper	4.1		80.0	77.7	BA	ug/L		92	70 - 130	200	20
Lead	1.9		80.0	75.3	BA	ug/L		92	70 - 130	200	20
Antimony	ND		80.0	68.7	BA	ug/L		86	70 - 130	200	20
Selenium	ND		80.0	72.2	BA	ug/L		90	70 - 130	200	20
Thallium	ND		80.0	77.0	BA	ug/L		96	70 - 130	200	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-390193/1-E
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390998

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Silver	ND		1.0	0.50	ug/L		02/28/17 09:59	03/01/17 11:42	1	
Cadmium	ND		1.0	0.25	ug/L		02/28/17 09:59	03/01/17 11:42	1	
Copper	ND		2.0	0.50	ug/L		02/28/17 09:59	03/01/17 11:42	1	
Lead	ND		1.0	0.50	ug/L		02/28/17 09:59	03/01/17 11:42	1	
Antimony	ND		2.0	0.50	ug/L		02/28/17 09:59	03/01/17 11:42	1	
Selenium	ND		2.0	0.50	ug/L		02/28/17 09:59	03/01/17 11:42	1	
Thallium	ND		1.0	0.50	ug/L		02/28/17 09:59	03/01/17 11:42	1	

Lab Sample ID: LCS 440-390193/2-E
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	77.5		ug/L		97	85 - 115
Cadmium	80.0	77.6		ug/L		97	85 - 115
Copper	80.0	79.2		ug/L		99	85 - 115
Lead	80.0	77.5		ug/L		97	85 - 115
Antimony	80.0	79.4		ug/L		99	85 - 115
Selenium	80.0	79.5		ug/L		99	85 - 115
Thallium	80.0	81.0		ug/L		101	85 - 115

Lab Sample ID: 440-177396-A-3-G MS
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	79.4		ug/L		99	70 - 130
Cadmium	ND		80.0	79.7		ug/L		100	70 - 130
Copper	2.7		80.0	84.2		ug/L		102	70 - 130
Lead	ND		80.0	79.7		ug/L		100	70 - 130
Antimony	ND		80.0	81.3		ug/L		102	70 - 130
Selenium	ND		80.0	80.9		ug/L		101	70 - 130
Thallium	ND		80.0	82.7		ug/L		103	70 - 130

Lab Sample ID: 440-177396-A-3-H MSD
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Silver	ND		80.0	78.0		ug/L		98	70 - 130	2	20
Cadmium	ND		80.0	78.1		ug/L		98	70 - 130	2	20
Copper	2.7		80.0	81.9		ug/L		99	70 - 130	3	20
Lead	ND		80.0	77.9		ug/L		97	70 - 130	2	20
Antimony	ND		80.0	80.3		ug/L		100	70 - 130	1	20
Selenium	ND		80.0	78.2		ug/L		98	70 - 130	3	20
Thallium	ND		80.0	81.8		ug/L		102	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390895/1-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390895

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 19:10	1

Lab Sample ID: LCS 440-390895/2-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.29		ug/L		104	85 - 115

Lab Sample ID: 440-177985-A-1-B MS
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.01		ug/L		100	70 - 130

Lab Sample ID: 440-177985-A-1-C MSD
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.26		ug/L		103	70 - 130	3	20

Lab Sample ID: MB 440-390193/1-B
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390274

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/23/17 23:14	02/25/17 03:45	1

Lab Sample ID: LCS 440-390193/2-B
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390274

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.87		ug/L		98	85 - 115

Lab Sample ID: 440-177550-B-4-C MS
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390274

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.83		ug/L		98	70 - 130

Lab Sample ID: 440-177550-B-4-D MSD
Matrix: Water
Analysis Batch: 391322

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390274

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.07		ug/L		101	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177195-K-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	190		191		mg/L		0.5	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-390502/10
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 17:48	1

Lab Sample ID: LCS 440-390502/11
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.140		mg/L		103	90 - 110

Lab Sample ID: MRL 440-390502/9
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2640		mg/L		132	10 - 200

Lab Sample ID: 440-177923-C-1 MS
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.460		mg/L		109	90 - 110

Lab Sample ID: 440-177923-C-1 MSD
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.240		mg/L		105	90 - 110	4	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

HPLC/IC

Analysis Batch: 389085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	300.0	
MB 440-389085/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389085/2	Lab Control Sample	Total/NA	Water	300.0	
440-177360-B-13 MS	Matrix Spike	Total/NA	Water	300.0	
440-177360-B-13 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 389086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	300.0	
MB 440-389086/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389086/2	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 389485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	314.0	
MB 440-389485/3	Method Blank	Total/NA	Water	314.0	
LCS 440-389485/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-389485/5	Lab Control Sample	Total/NA	Water	314.0	
440-177165-A-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-177165-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 391868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	1613B	
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	1613B	152230
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	152230
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	152230
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152230

Metals

Filtration Batch: 390193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-390193/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-390193/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-390193/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-390193/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Metals (Continued)

Filtration Batch: 390193 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-A-3-G MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177396-A-3-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-177550-B-4-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177550-B-4-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390274

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	245.1	390193
MB 440-390193/1-B	Method Blank	Dissolved	Water	245.1	390193
LCS 440-390193/2-B	Lab Control Sample	Dissolved	Water	245.1	390193
440-177550-B-4-C MS	Matrix Spike	Dissolved	Water	245.1	390193
440-177550-B-4-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	390193

Prep Batch: 390895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	245.1	
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 390998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	200.2	390193
MB 440-390193/1-E	Method Blank	Dissolved	Water	200.2	390193
LCS 440-390193/2-E	Lab Control Sample	Dissolved	Water	200.2	390193
440-177396-A-3-G MS	Matrix Spike	Dissolved	Water	200.2	390193
440-177396-A-3-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	390193

Analysis Batch: 391252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	245.1	390895
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	390895
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	390895
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	390895
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	390895

Analysis Batch: 391322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	245.1	390274
MB 440-390193/1-B	Method Blank	Dissolved	Water	245.1	390274
LCS 440-390193/2-B	Lab Control Sample	Dissolved	Water	245.1	390274
440-177550-B-4-C MS	Matrix Spike	Dissolved	Water	245.1	390274
440-177550-B-4-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	390274

Analysis Batch: 391408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	200.8	390998
MB 440-390193/1-E	Method Blank	Dissolved	Water	200.8	390998
LCS 440-390193/2-E	Lab Control Sample	Dissolved	Water	200.8	390998
440-177396-A-3-G MS	Matrix Spike	Dissolved	Water	200.8	390998

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Metals (Continued)

Analysis Batch: 391408 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177396-A-3-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390998

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

General Chemistry

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177195-K-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 390502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-390502/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-390502/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-390502/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

General Chemistry (Continued)

Analysis Batch: 390502 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177923-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
BA	Relative percent difference out of control
QP	Holding time Immediate. Analyzed as close to receipt as possible
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



CHAIN OF CUSTODY FORM

440-177397 Chain of Custody

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvaashi Patel 17461 DeLian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Call 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [008] Outfall 008 Comp		Field Readings Comments		
Test America's services under this COC shall be performed in accordance with the TCOs when Blanket Service Agreement 2015-16 is in effect and in accordance with the TCOs when Blanket Service Agreement 2016-17 is in effect and in effect, and TestAmerica Laboratories Inc.		Project Manager: Katherine Miller 520.288.8606, 520.904.6944 (cell)		Total Dissolved Metals: Mercury (E245.1)		
Sampler: Dan Smith - <i>RO 333</i>		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Recoverable Metals: Mercury (E245.1)		
Sample Description	Sample I.D.	Sampling Date/Time	Container Type	Preservative	Boths #	MS/MSD
Outfall 008	Outfall008_20170218_Comp	2/18/2017 / 10:45	500 mL Poly	HNO ₃	85	No
			1 L Glass Amber	None	110	No
			500 mL Poly	None	130	No
			500 mL Poly	None	155	No
			500 mL Poly	H ₂ SO ₄	180	No
			500 mL Poly	NaOH	220	No
			2.5 Gal Cube	None	225	No
			1 L Glass Amber	None	250	No
			1 Gal Cube	None	295	No
			1 Gal Cube	HNO ₃	345	Hour
			1 L Poly	None	205	No
			borosilicate vials	None	320	No
			1 L Glass Amber	None	110	No
			500 mL Poly	None	130	No

Relinquished By: <i>[Signature]</i> Date/Time: 12/10/17 Company: JHA	Received By: <i>[Signature]</i> Date/Time: 8:18:00 Company: JHA
Relinquished By: <i>[Signature]</i> Date/Time: 8:18:00 Company: JHA	Received By: <i>[Signature]</i> Date/Time: 8:18:00 Company: JHA
Relinquished By: <i>[Signature]</i> Date/Time: 8:18:00 Company: JHA	Received By: <i>[Signature]</i> Date/Time: 8:18:00 Company: JHA

Turn-around time: (Check)
 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X ___
 48 Hour: ___ 5 Day: ___ Normal: ___
 Sample Integrity: (Check)
 Intact: ___ On Ice: ___
 Store samples for 6 months.
 Data Requirements: (Check)
 No Level IV: ___ All Level IV: ___ X ___

1.11.17 1.00/1.9 18-SC4



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Patel, Urvasi		Carrier Tracking Note:	
Client Contact: urvasi.patel@testamericainc.com		E-Mail: urvasi.patel@testamericainc.com		State of Origin: California	
Shipping/Receiving		Phone:		Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-177397-1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 3/2/2017		Preservation Codes: M - Hexane N - None O - ANAO2 P - Na2OAS D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
City: West Sacramento		TAT Requested (days):		Analysis Requested:	
State, Zip: CA, 95605		PO #:		Total Number of containers: 2	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		WO #:		Special Instructions/Note: See OAS, Boeing_wiu to zero, ug/L. Use Boeing glassware.	
Email:		Project #: 44009879			
Project Name: Boeing NPDES SSFL outfalls		SOW#:			
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
Outfall008_20170218_Comp (440-177397-1)		2/18/17		X	
Sample Time		Sample Time		Perform MS/MSD (Yes or No)	
09:45 Pacific		09:45 Pacific		X	
Sample Type (C=comp, G=grab)		Sample Type (In-water, In-soil, On-surface, Other)		1613B/1613B_Box_Sep_P_Standard List w/ Totals	
Preservation Code:		Matrix:			
		Water			

rec'd 4/3 2/22/17

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____ Time: _____
 Method of Shipment: _____

Relinquished by: <i>Vu Bank</i>	Date/Time: 2/20/17 17:00	Company: TAI	Received by: <i>Lee J. ...</i>	Date/Time: 2/22/17 10:00	Company: TAWS
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Yes No
 Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks: *See*



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177397-1

Login Number: 177397

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177397-1

Login Number: 177397

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:15 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177397-1

Login Number: 177397

List Number: 4

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 02:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-177397-1	Outfall008_20170218_Comp	60	62	50	55	62	74	65	70
MB 320-152230/1-A	Method Blank	52	53	39	45	49	58	54	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-177397-1	Outfall008_20170218_Comp	63	57	64	49	57	60	45
MB 320-152230/1-A	Method Blank	53	49	57	40	48	47	35

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152230/2-A	Lab Control Sample	62	63	48	53	59	75	71	70
LCSD 320-152230/3-A	Lab Control Sample Dup	51	51	40	44	50	62	52	57

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152230/2-A	Lab Control Sample	63	59	66	54	66	63	55
LCSD 320-152230/3-A	Lab Control Sample Dup	53	46	52	41	47	50	38

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177397-2

Client Project/Site: Ruotine Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 9:42:57 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 9:42:57 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177397-1	Outfall008_20170218_Comp	Water	02/18/17 09:45	02/18/17 18:40

- 1
- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Job ID: 440-177397-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177397-2

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 1.9° C.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall008_20170218_Comp (440-177397-1)

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

The following sample was prepped at a reduced aliquot due to sediment.

Outfall008_20170218_Comp (440-177397-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.19		1.11	1.14	3.00	1.49	pCi/L	03/16/17 09:14	03/19/17 20:28	1
Gross Beta	2.66		0.766	0.811	4.00	0.954	pCi/L	03/16/17 09:14	03/19/17 20:28	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.41	U	7.68	7.69	20.0	13.7	pCi/L	02/23/17 14:59	02/24/17 15:13	1
Potassium-40	-86.3	U	242	242		310	pCi/L	02/23/17 14:59	02/24/17 15:13	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0715	U	0.0800	0.0803	1.00	0.128	pCi/L	02/23/17 09:25	03/17/17 05:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.2		40 - 110					02/23/17 09:25	03/17/17 05:43	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.433	U	0.296	0.299	1.00	0.583	pCi/L	02/23/17 10:05	03/09/17 11:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.2		40 - 110					02/23/17 10:05	03/09/17 11:22	1
Y Carrier	92.3		40 - 110					02/23/17 10:05	03/09/17 11:22	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.131	U	0.357	0.357	3.00	0.619	pCi/L	03/03/17 14:30	03/13/17 10:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.5		40 - 110					03/03/17 14:30	03/13/17 10:33	1
Y Carrier	94.6		40 - 110					03/03/17 14:30	03/13/17 10:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-36.9	U	153	153	500	282	pCi/L	03/17/17 10:22	03/17/17 19:03	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.450		0.282	0.284	1.00	0.275	pCi/L	03/09/17 12:44	03/17/17 19:12	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/16/17 09:14	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:28	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294389	02/24/17 15:13	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.24 mL	1.0 g	294225	02/23/17 09:25	PJM	TAL SL
Total/NA	Analysis	903.0		1			298072	03/17/17 05:43	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.24 mL	1.0 g	294240	02/23/17 10:05	PJM	TAL SL
Total/NA	Analysis	904.0		1			296684	03/09/17 11:22	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.42 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:33	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 19:03	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.19 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298409	03/17/17 19:12	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
						Uncert. (2σ+/-)							
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294225/1-A
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294225

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04263	U	0.0791	0.0792	1.00	0.140	pCi/L	02/23/17 09:25	03/17/17 05:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.6		40 - 110					02/23/17 09:25	03/17/17 05:43	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294225/2-A
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.70		1.14	1.00	0.114	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	94.4		40 - 110							

Lab Sample ID: 440-177394-A-1-B MS
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0776	U	11.4	10.53		1.12	1.00	0.125	pCi/L	93	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	88.2		40 - 110								

Lab Sample ID: 440-177394-A-1-C MSD
Matrix: Water
Analysis Batch: 298072

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294225

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0776	U	11.4	10.66		1.14	1.00	0.114	pCi/L	94	75 - 138	0.06	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	85.8		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294240/1-A
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294240

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.4979		0.304	0.307	1.00	0.470	pCi/L	02/23/17 10:05	03/09/17 11:22	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	92.6		40 - 110							
Y Carrier	87.9		40 - 110							
								Prepared	Analyzed	Dil Fac
								02/23/17 10:05	03/09/17 11:22	1
								02/23/17 10:05	03/09/17 11:22	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-294240/2-A
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	15.31		1.64	1.00	0.440	pCi/L	111	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	94.4		40 - 110						
Y Carrier	88.6		40 - 110						

Lab Sample ID: 440-177394-A-1-E MS
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.426		13.7	15.90		1.71	1.00	0.420	pCi/L	113	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	88.2		40 - 110								
Y Carrier	87.1		40 - 110								

Lab Sample ID: 440-177394-A-1-F MSD
Matrix: Water
Analysis Batch: 296684

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294240

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.426		13.7	15.82		1.73	1.00	0.520	pCi/L	112	45 - 150	0.03	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	85.8		40 - 110										
Y Carrier	84.5		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110								03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110								03/03/17 14:30	03/13/17 10:31	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	80.3		40 - 110								
Y Carrier	104		40 - 110								

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	89.4		30 - 110

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	63.1		30 - 110										

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER	Limit
	Result	Qual		Result	Qual									
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146	0.83	1	
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1	
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	81.8		30 - 110											

Lab Sample ID: 440-178167-M-1-G MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual								
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146		
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	74.3		30 - 110										

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	RER	Limit
	Result	Qual		Result	Qual									
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1	
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1	
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	89.0		30 - 110											

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Rutine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Rad

Prep Batch: 294225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294225/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294225/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-177394-A-1-B MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-177394-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 294240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294240/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294240/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-177394-A-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-177394-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Rad (Continued)

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.



CHAIN OF CUSTODY FORM

440-177397 Chain of Custody

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvaashi Patel 17461 DeLian Ave Suite #100 Irvine CA 92614 Tel 949-280-3269 Call 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [008] Outfall 008 Comp		Field Readings Comments					
Test America's services under this COC shall be performed in accordance with the TACs when Blanket Service Agreement 2015-16 is in force and in effect between Halley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Project Manager: Katherine Miller 520.288.8806, 520.904.6944 (cell)		Total Dissolved Metals: Mercury (E245.1)					
Sampler: Dan Smith - <i>RO 333</i>		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Total Recoverable Metals: Mercury (E245.1)					
Sample Description	Sample I.D.	Sampling Date/Time	Container Type	Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED	Field Readings
Outfall 008	Outfall008_20170218_Comp	2/18/2017 <i>10:45</i>	500 mL Poly	1	HNO ₃	85	No	Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-F-02-013)	
			1 L Glass Amber	2	None	130	No	Total Dissolved Metals: (E200.7): Ni, Zn (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Ti	
			500 mL Poly	1	None	155	No	TDS (SM2540C/E160.1)	
			500 mL Poly	1	H ₂ SO ₄	180	No	Perchlorate (300)	
			500 mL Poly	1	NaOH	220	No	Cr, SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N	
			2.5 Gal Cube	1	None	225	No	TCDD (and all congeners) (E1613B)	
			1 L Glass Amber	1	None	250	No	Total Recoverable Metals: (E200.7): Ni, Zn (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Ti	
			1 Gal Cube	8	None	298	No		
			1 Gal Cube	1	HNO ₃	346	Hour		
			1 L Poly	1	None	205	No		
			borosilicate vials	1	None	320	No		
			1 L Glass Amber	2	None	110	No		
			500 mL Poly	2	None	130	No		

Relinquished By: <i>[Signature]</i>	Date/Time: 12/10/17	Company: JHA	Received By: <i>[Signature]</i>	Date/Time: 8.18.17 11:00
Relinquished By: <i>[Signature]</i>	Date/Time: 8.18.17 10:40	Company: JHA	Received By: <i>[Signature]</i>	Date/Time: 8.18.17 18:40
Relinquished By: <i>[Signature]</i>	Date/Time: 8.18.17 10:45	Company: JHA	Received By: <i>[Signature]</i>	Date/Time: 8.18.17 18:40

1.11.17 1.00/1.9 18-SCF



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177397-2

Login Number: 177397

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177397-2

Login Number: 177397

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/21/17 01:16 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Rutine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)		
440-177394-A-1-B MS	Matrix Spike	88.2		
440-177394-A-1-C MSD	Matrix Spike Duplicate	85.8		
440-177397-1	Outfall008_20170218_Comp	75.2		
LCS 160-294225/2-A	Lab Control Sample	94.4		
MB 160-294225/1-A	Method Blank	92.6		

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)		
440-177394-A-1-E MS	Matrix Spike	88.2	87.1		
440-177394-A-1-F MSD	Matrix Spike Duplicate	85.8	84.5		
440-177397-1	Outfall008_20170218_Comp	75.2	92.3		
LCS 160-294240/2-A	Lab Control Sample	94.4	88.6		
MB 160-294240/1-A	Method Blank	92.6	87.9		

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)		
440-177394-A-1-I MS	Matrix Spike	80.3	104		
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2		
440-177397-1	Outfall008_20170218_Comp	77.5	94.6		
LCS 160-295967/2-A	Lab Control Sample	88.0	100		
MB 160-295967/1-A	Method Blank	77.8	97.2		

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)		
440-177394-A-1-L MS	Matrix Spike	63.1		
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8		
440-178167-M-1-G MS	Matrix Spike	74.3		

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177397-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 14, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177397-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall008_20170218_ Comp	440-177397-1	N/A	Water	2/18/17 9:45 AM	E200.8
Outfall008_20170218_ Comp_F	440-177397-2	N/A	Water	2/18/17 9:45 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177397-4:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. METHOD 200.8— METALS

Marcia Hilchey of MEC^x reviewed the SDG on April 14, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall008_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 5 days after receipt. All dissolved metals results from this sample were qualified as estimated (UJ).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$ for the instrument tune associated with the total metals analyses. Data was not provided for the tune associated with the dissolved metals analyses.

Calibration criteria were met. The initial calibration r values were ≥ 0.995 , y -intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with the total metals analysis; this review is based on summary data for that CRQL

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total metals analysis; this review is based on summary data for those blanks.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total metals; this review is based on summary data for that ICSA analysis.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.



III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773974

Analysis Method E200.8

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall008_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	U	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	U	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177397-4

Client Project/Site: Ruotine Outfall 008 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 4:23:41 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 4:23:41 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177397-1	Outfall008_20170218_Comp	Water	02/18/17 09:45	02/18/17 18:40
440-177397-2	Outfall008_20170218_Comp_F	Water	02/18/17 09:45	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Job ID: 440-177397-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177397-4

Comments

200.7 Metals analyzed with 200.8 method with 200.7 RLs.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.4° C and 1.9° C.

Receipt Exceptions

No additional comments.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:55	1
Zinc	ND		20	10	ug/L		03/01/17 15:15	03/03/17 14:55	1

Client Sample ID: Outfall008_20170218_Comp_F

Lab Sample ID: 440-177397-2

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/28/17 10:00	03/01/17 11:56	1
Zinc	ND		20	10	ug/L		02/28/17 10:00	03/01/17 11:56	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Client Sample ID: Outfall008_20170218_Comp

Lab Sample ID: 440-177397-1

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:55	IH1	TAL IRV

Client Sample ID: Outfall008_20170218_Comp_F

Lab Sample ID: 440-177397-2

Date Collected: 02/18/17 09:45

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	390193	02/23/17 16:57	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390998	02/28/17 10:00	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			391408	03/01/17 11:56	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		03/01/17 15:15	03/03/17 14:44	1
Zinc	ND		20	10	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	74.3		ug/L		93	85 - 115
Zinc	80.0	74.6		ug/L		93	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	ND		80.0	79.8		ug/L		100	70 - 130
Zinc	14	J,DX	80.0	89.7		ug/L		95	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nickel	ND		80.0	76.3		ug/L		95	70 - 130	4	20
Zinc	14	J,DX	80.0	89.3		ug/L		94	70 - 130	0	20

Lab Sample ID: MB 440-390193/1-E
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390998

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/28/17 09:59	03/01/17 11:42	1
Zinc	ND		20	10	ug/L		02/28/17 09:59	03/01/17 11:42	1

Lab Sample ID: LCS 440-390193/2-E
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	77.2		ug/L		97	85 - 115
Zinc	80.0	78.0		ug/L		98	85 - 115

Lab Sample ID: 440-177396-A-3-G MS
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	ND		80.0	82.2		ug/L		103	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-177396-A-3-G MS
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	ND		80.0	84.0		ug/L		105	70 - 130

Lab Sample ID: 440-177396-A-3-H MSD
Matrix: Water
Analysis Batch: 391408

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390998

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		80.0	79.3		ug/L		99	70 - 130	4	20
Zinc	ND		80.0	84.0		ug/L		105	70 - 130	0	20



QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Metals

Filtration Batch: 390193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-390193/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-390193/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177396-A-3-G MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177396-A-3-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	200.2	390193
MB 440-390193/1-E	Method Blank	Dissolved	Water	200.2	390193
LCS 440-390193/2-E	Lab Control Sample	Dissolved	Water	200.2	390193
440-177396-A-3-G MS	Matrix Spike	Dissolved	Water	200.2	390193
440-177396-A-3-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	390193

Analysis Batch: 391408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-2	Outfall008_20170218_Comp_F	Dissolved	Water	200.8	390998
MB 440-390193/1-E	Method Blank	Dissolved	Water	200.8	390998
LCS 440-390193/2-E	Lab Control Sample	Dissolved	Water	200.8	390998
440-177396-A-3-G MS	Matrix Spike	Dissolved	Water	200.8	390998
440-177396-A-3-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390998

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177397-1	Outfall008_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 008 Comp

TestAmerica Job ID: 440-177397-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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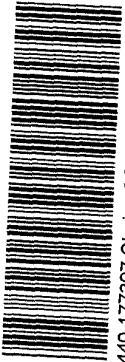
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CHAIN OF CUSTODY FORM

440-177397 Chain of Custody

Client Name/Address:
 Halley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108
Test America Contact: Urvaashi Patel
 17461 DeLian Ave Suite #100
 Irvine CA 92614
 Tel 949-260-3269
 Call 949-333-9055

Project:
 Boeing-SSFL NPDES
 Permit 2017
 Routine Outfall [008]
 Outfall 008
 Comp

Project Manager: Katherine Miller
 520.288.8606, 520.904.6944 (cell)

Field Manager: Mark Dominick
 818.350.7312, 818.599.0702 (cell)

Test America's services under this COC shall be performed in accordance with the TACs when Blanket Service Agreement 2015-16 is in force and in effect between Halley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.

Sampler: Dan Smith - *RO 333*

Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	Cont.	Preservative	Bottle #	MS/MSD
Outfall 008	Outfall008_20170218_Comp	2/18/2017 <i>10:45</i>	WM	500 mL Poly	1	HNO ₃	85	No
			WM	1 L Glass Amber	2	None	110	No
			WM	500 mL Poly	2	None	130	No
			WM	500 mL Poly	1	None	155	No
			WM	500 mL Poly	1	H ₂ SO ₄	180	No
			WM	500 mL Poly	1	NaOH	220	No
			WM	2.5 Gal Cube	1	None	225	No
			WM	1 L Glass Amber	1	None	250	No
			WM	1 Gal Cube	8	None	298	No
			WM	Preservative vials	1	HNO ₃	346	Hour
			WM	1L Poly	1	None	205	No
			WM	borosilicate vials	1	None	320	No
			WM	1 L Glass Amber	2	None	110	No
			WM	500 mL Poly	2	None	130	No

ANALYSIS REQUIRED

Total Recoverable Metals: (E200.7): Ni, Zn	X
TDS (SM2540C/E160.1)	X
Perchlorate (300)	X
Cr, SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N	X
TCDD (and all congeners) (E1613B)	X
Total Dissolved Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Tl	X
Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1)	X
Chronic Toxicity - Selenium (EPA-821-F-02-013)	X
Cyanide (SM4500-CN-E / E335.2)	X
Ammonia-N (350.2)	X
Total Recoverable Metals: Mercury (E245.1)	X
Total Dissolved Metals: Mercury (E245.1)	X

Field Readings

48 hours Holding Time NO3 & NO2

Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.

Only test if first or second rain events of the year

Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.

Filter and preserve with 20hrs of receipt at lab

Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.

Hold

Hold

Received By: *[Signature]* Date/Time: 2/18/2017 10:45 Company: *JHA*

Relinquished By: *[Signature]* Date/Time: 2/18/2017 10:45 Company: *JHA*

Turn-around time (Check): 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X ___
 48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity (Check): Intact: ___ On Ice: ___
 Store samples for 6 months: ___
 Data Requirements: (Check) No Level IV: ___ X ___

1.1.1.4 1.0.1.9 18-SC4



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177397-4

Login Number: 177397

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-172633-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 2, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-172633-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170109_ Grab	440-172633-1	N/A	Water	1/9/2017 9:15:00 AM	E1664, E624, SM9221F, SAM348- 357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-172633-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.
- Analysis for Human Bacteroidetes was subcontracted to Source Molecular. No COC or sample receipt information for this shipment was provided in the data package.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met, with two exceptions. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits, with the exception of %Ds of 33.5% for trans-1,3-dichloropropene and 45.6% for acrolein. Results for the %D outliers, both nondetects, were qualified as estimated (UJ).

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall009_20170109_Grab, for acrolein, acrylonitrile, and 2-chloroethyl vinyl ether. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170109 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.



III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Results reported between the MDL and the reporting limit were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL MINERALS

Marcia Hilchey of MEC^x reviewed the SDG on March 2, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 1664A, *Standard Method for the Examination of Water and Wastewater 9221F*, SAM348-357 (Human Bacteroides by Quantitative PCR) and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

IV.1. HOLDING TIMES

The subcontract laboratory received the sample for Human Bacteroides analysis after the holding time requirement (24-48 hours); therefore, the result for this analysis was qualified as estimated (UJ). The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met. The requested *E. coli* was prepared within 8 hours of collection; no qualifications were required.



IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing, and biological controls were acceptable.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease). The method blank is not applicable to the biological method. The negative control sample was acceptable.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

IV.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

IV.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401726331

Analysis Method E1664

Sample Name Outfall009_20170109_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/9/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-172633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.3	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall009_20170109_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/9/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-172633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	UJ	C
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U	
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U	
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U	
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U	
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U	
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U	
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U	
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Methylene chloride	N	75-09-2	1.1	2.0	0.88	ug/L	J,DX	J	DNQ
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U	
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U	
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U	
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U	
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	UJ	C
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	U	
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U	
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U	

Analysis Method SAM348-357

Sample Name Outfall009_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-172633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	absent			CEs/100	U	UJ	H

Analysis Method SM9221F

Sample Name Outfall009_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-172633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	200	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-172633-1

Client Project/Site: Outfall 009-Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/16/2017 9:26:12 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/16/2017 9:26:13 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-172633-1	Outfall009_20170109_Grab	Water	01/09/17 09:15	01/09/17 14:20
440-172633-3	TB-20170109	Water	01/09/17 09:15	01/09/17 14:20

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Job ID: 440-172633-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-172633-1

Comments

No additional comments.

Receipt

The samples were received on 1/9/2017 2:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.5° C, 1.7° C, 1.9° C, 2.0° C, 2.1° C, 2.3° C, 2.9° C and 3.1° C.

GC/MS VOA

Method(s) 624, 8260B: The continuing calibration verification (CCV) associated with batch 440-380929 recovered above the upper control limit for trans-1,3-Dichloropropene and/or 2,2-Dichloropropane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall009_20170109_Grab (440-172633-1), TB-20170109 (440-172633-3) and (CCVIS 440-380929/2).

Method(s) 624, 8260B: The continuing calibration verification (CCV) associated with batch 440-380937 recovered above the upper control limit for Acrolein. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: Outfall009_20170109_Grab (440-172633-1), TB-20170109 (440-172633-3) and (CCVIS 440-380937/2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-381964 and analytical batch 440-382023. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method Human Bacteroid: This method was subcontracted to Source Molecular. The subcontract laboratory certification is different from that of the facility issuing the final report.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract Work

Method Source Molecular-Human Bacteroidales: This method was subcontracted to TestAmerica Irvine. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Client Sample ID: Outfall009_20170109_Grab

Lab Sample ID: 440-172633-1

Date Collected: 01/09/17 09:15

Matrix: Water

Date Received: 01/09/17 14:20

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/10/17 11:33	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Acrolein	ND		5.0	2.5	ug/L			01/10/17 11:33	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/10/17 11:33	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Benzene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Bromoform	ND		1.0	0.40	ug/L			01/10/17 18:11	1
Bromomethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Chloroethane	ND		1.0	0.40	ug/L			01/10/17 18:11	1
Chloroform	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Chloromethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Methylene Chloride	1.1	J,DX	2.0	0.88	ug/L			01/10/17 18:11	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Toluene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Trichloroethene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 18:11	1
Naphthalene	ND		1.0	0.40	ug/L			01/10/17 18:11	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/10/17 18:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	108		80 - 128		01/10/17 11:33	1
Dibromofluoromethane (Surr)	104		76 - 132		01/10/17 11:33	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/10/17 11:33	1
4-Bromofluorobenzene (Surr)	105		80 - 120		01/10/17 18:11	1
Dibromofluoromethane (Surr)	126		76 - 132		01/10/17 18:11	1
Toluene-d8 (Surr)	102		80 - 128		01/10/17 18:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		01/14/17 07:05	01/14/17 12:27	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Client Sample ID: Outfall009_20170109_Grab

Lab Sample ID: 440-172633-1

Date Collected: 01/09/17 09:15

Matrix: Water

Date Received: 01/09/17 14:20

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	200		1.8	1.8	MPN/100mL			01/09/17 16:23	1

Client Sample ID: TB-20170109

Lab Sample ID: 440-172633-3

Date Collected: 01/09/17 09:15

Matrix: Water

Date Received: 01/09/17 14:20

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/10/17 11:03	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Acrolein	ND		5.0	2.5	ug/L			01/10/17 11:03	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/10/17 11:03	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Benzene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Bromoform	ND		1.0	0.40	ug/L			01/10/17 17:43	1
Bromomethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Chloroethane	ND		1.0	0.40	ug/L			01/10/17 17:43	1
Chloroform	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Chloromethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Toluene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Trichloroethene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 17:43	1
Naphthalene	ND		1.0	0.40	ug/L			01/10/17 17:43	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/10/17 17:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		80 - 128		01/10/17 11:03	1
Dibromofluoromethane (Surr)	103		76 - 132		01/10/17 11:03	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/10/17 11:03	1
4-Bromofluorobenzene (Surr)	104		80 - 120		01/10/17 17:43	1
Dibromofluoromethane (Surr)	130		76 - 132		01/10/17 17:43	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Client Sample ID: TB-20170109

Lab Sample ID: 440-172633-3

Date Collected: 01/09/17 09:15

Matrix: Water

Date Received: 01/09/17 14:20

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 128		01/10/17 17:43	1

Method: 624 - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		2.0	0.88	ug/L			01/11/17 12:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		01/11/17 12:22	1
Dibromofluoromethane (Surr)	107		76 - 132		01/11/17 12:22	1
Toluene-d8 (Surr)	106		80 - 128		01/11/17 12:22	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Client Sample ID: Outfall009_20170109_Grab

Lab Sample ID: 440-172633-1

Date Collected: 01/09/17 09:15

Matrix: Water

Date Received: 01/09/17 14:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	380929	01/10/17 18:11	TCN	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	380937	01/10/17 11:33	AYL	TAL IRV
Total/NA	Prep	1664A			940 mL	1000 mL	381964	01/14/17 07:05	L2A	TAL IRV
Total/NA	Analysis	1664A		1			382023	01/14/17 12:27	L2A	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	381820		KRW	TAL IRV
								(Start) 01/09/17 16:23		
								(End) 01/12/17 16:40		

Client Sample ID: TB-20170109

Lab Sample ID: 440-172633-3

Date Collected: 01/09/17 09:15

Matrix: Water

Date Received: 01/09/17 14:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624	RA	1	10 mL	10 mL	381161	01/11/17 12:22	AA	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	380929	01/10/17 17:43	TCN	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	380937	01/10/17 11:03	AYL	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-380929/5

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Benzene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Bromoform	ND		1.0	0.40	ug/L			01/10/17 08:59	1
Bromomethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Chloroethane	ND		1.0	0.40	ug/L			01/10/17 08:59	1
Chloroform	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Chloromethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/10/17 08:59	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Toluene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Trichloroethene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/10/17 08:59	1
Naphthalene	ND		1.0	0.40	ug/L			01/10/17 08:59	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/10/17 08:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120		01/10/17 08:59	1
Dibromofluoromethane (Surr)	115		76 - 132		01/10/17 08:59	1
Toluene-d8 (Surr)	101		80 - 128		01/10/17 08:59	1

Lab Sample ID: LCS 440-380929/6

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	31.0		ug/L		124	70 - 130
1,1,2,2-Tetrachloroethane	25.0	22.2		ug/L		89	63 - 130
1,1,2-Trichloroethane	25.0	25.2		ug/L		101	70 - 130
1,1-Dichloroethane	25.0	25.3		ug/L		101	64 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-380929/6

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	25.0	23.8		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	24.8		ug/L		99	70 - 130
1,2-Dichloroethane	25.0	30.4		ug/L		122	57 - 138
1,2-Dichloropropane	25.0	25.4		ug/L		101	67 - 130
1,3-Dichlorobenzene	25.0	24.0		ug/L		96	70 - 130
1,4-Dichlorobenzene	25.0	24.4		ug/L		98	70 - 130
Benzene	25.0	23.8		ug/L		95	68 - 130
Bromoform	25.0	32.0		ug/L		128	60 - 148
Bromomethane	25.0	29.5		ug/L		118	64 - 139
Carbon tetrachloride	25.0	32.1		ug/L		129	60 - 150
Chlorobenzene	25.0	23.8		ug/L		95	70 - 130
Dibromochloromethane	25.0	31.3		ug/L		125	69 - 145
Chloroethane	25.0	27.2		ug/L		109	64 - 135
Chloroform	25.0	28.8		ug/L		115	70 - 130
Chloromethane	25.0	26.7		ug/L		107	47 - 140
cis-1,3-Dichloropropene	25.0	30.3		ug/L		121	70 - 133
Bromodichloromethane	25.0	31.8		ug/L		127	70 - 132
Ethylbenzene	25.0	24.9		ug/L		100	70 - 130
Methylene Chloride	25.0	23.8		ug/L		95	52 - 130
Tetrachloroethene	25.0	25.6		ug/L		102	70 - 130
Toluene	25.0	23.9		ug/L		96	70 - 130
trans-1,2-Dichloroethene	25.0	27.0		ug/L		108	70 - 130
trans-1,3-Dichloropropene	25.0	31.5		ug/L		126	70 - 132
Trichlorofluoromethane	25.0	32.0		ug/L		128	60 - 150
Vinyl chloride	25.0	26.6		ug/L		106	59 - 133
Trichloroethene	25.0	26.8		ug/L		107	70 - 130
cis-1,2-Dichloroethene	25.0	26.9		ug/L		108	70 - 133
Naphthalene	25.0	25.5		ug/L		102	60 - 140
Xylenes, Total	50.0	50.8		ug/L		102	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	113		76 - 132
Toluene-d8 (Surr)	99		80 - 128

Lab Sample ID: 440-172641-A-1 MS

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	30.3		ug/L		121	70 - 130
1,1,1,2-Tetrachloroethane	ND		25.0	21.5		ug/L		86	63 - 130
1,1,2-Trichloroethane	ND		25.0	24.5		ug/L		98	70 - 130
1,1-Dichloroethane	ND		25.0	25.0		ug/L		100	65 - 130
1,1-Dichloroethene	ND		25.0	23.3		ug/L		93	70 - 130
1,2-Dichlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130
1,2-Dichloroethane	ND		25.0	31.0		ug/L		124	56 - 146
1,2-Dichloropropane	ND		25.0	25.9		ug/L		104	69 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-172641-A-1 MS

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,3-Dichlorobenzene	ND		25.0	24.0		ug/L		96	70 - 130
1,4-Dichlorobenzene	ND		25.0	24.5		ug/L		98	70 - 130
Benzene	ND		25.0	23.6		ug/L		94	66 - 130
Bromoform	ND		25.0	31.3		ug/L		125	59 - 150
Bromomethane	ND		25.0	28.6		ug/L		115	62 - 131
Carbon tetrachloride	ND		25.0	31.1		ug/L		124	60 - 150
Chlorobenzene	ND		25.0	23.3		ug/L		93	70 - 130
Dibromochloromethane	ND		25.0	31.0		ug/L		124	70 - 148
Chloroethane	ND		25.0	25.9		ug/L		103	68 - 130
Chloroform	ND		25.0	28.9		ug/L		116	70 - 130
Chloromethane	ND		25.0	25.6		ug/L		102	39 - 144
cis-1,3-Dichloropropene	ND		25.0	29.5		ug/L		118	70 - 133
Bromodichloromethane	ND		25.0	33.0		ug/L		132	70 - 138
Ethylbenzene	ND		25.0	23.9		ug/L		95	70 - 130
Methylene Chloride	ND		25.0	24.1		ug/L		96	52 - 130
Tetrachloroethene	ND		25.0	23.9		ug/L		95	70 - 137
Toluene	ND		25.0	22.6		ug/L		90	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.0		ug/L		104	70 - 130
trans-1,3-Dichloropropene	ND		25.0	31.5		ug/L		126	70 - 138
Trichlorofluoromethane	ND		25.0	30.4		ug/L		122	60 - 150
Vinyl chloride	ND		25.0	25.4		ug/L		102	50 - 137
Trichloroethene	ND		25.0	26.4		ug/L		106	70 - 130
cis-1,2-Dichloroethene	ND		25.0	27.2		ug/L		109	70 - 130
Naphthalene	ND		25.0	24.6		ug/L		99	60 - 140
Xylenes, Total	ND		50.0	49.2		ug/L		98	70 - 133

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	117		76 - 132
Toluene-d8 (Surr)	96		80 - 128

Lab Sample ID: 440-172641-A-1 MSD

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	30.9		ug/L		123	70 - 130	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	23.0		ug/L		92	63 - 130	7	30
1,1,2-Trichloroethane	ND		25.0	25.5		ug/L		102	70 - 130	4	25
1,1-Dichloroethane	ND		25.0	25.2		ug/L		101	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	24.0		ug/L		96	70 - 130	3	20
1,2-Dichlorobenzene	ND		25.0	25.1		ug/L		101	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	30.6		ug/L		123	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	25.8		ug/L		103	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	24.4		ug/L		98	70 - 130	2	20
1,4-Dichlorobenzene	ND		25.0	24.8		ug/L		99	70 - 130	1	20
Benzene	ND		25.0	23.9		ug/L		96	66 - 130	1	20
Bromoform	ND		25.0	32.2		ug/L		129	59 - 150	3	25

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-172641-A-1 MSD

Matrix: Water

Analysis Batch: 380929

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromomethane	ND		25.0	29.9		ug/L		120	62 - 131	4	25
Carbon tetrachloride	ND		25.0	31.6		ug/L		127	60 - 150	2	25
Chlorobenzene	ND		25.0	23.4		ug/L		94	70 - 130	1	20
Dibromochloromethane	ND		25.0	31.1		ug/L		124	70 - 148	0	25
Chloroethane	ND		25.0	27.3		ug/L		109	68 - 130	5	25
Chloroform	ND		25.0	28.9		ug/L		116	70 - 130	0	20
Chloromethane	ND		25.0	26.0		ug/L		104	39 - 144	2	25
cis-1,3-Dichloropropene	ND		25.0	30.1		ug/L		120	70 - 133	2	20
Bromodichloromethane	ND		25.0	32.5		ug/L		130	70 - 138	2	20
Ethylbenzene	ND		25.0	24.3		ug/L		97	70 - 130	2	20
Methylene Chloride	ND		25.0	24.0		ug/L		96	52 - 130	0	20
Tetrachloroethene	ND		25.0	24.9		ug/L		99	70 - 137	4	20
Toluene	ND		25.0	23.2		ug/L		93	70 - 130	3	20
trans-1,2-Dichloroethene	ND		25.0	26.6		ug/L		106	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	31.9		ug/L		128	70 - 138	1	25
Trichlorofluoromethane	ND		25.0	31.6		ug/L		126	60 - 150	4	25
Vinyl chloride	ND		25.0	26.2		ug/L		105	50 - 137	3	30
Trichloroethene	ND		25.0	26.6		ug/L		107	70 - 130	1	20
cis-1,2-Dichloroethene	ND		25.0	27.3		ug/L		109	70 - 130	0	20
Naphthalene	ND		25.0	26.0		ug/L		104	60 - 140	5	30
Xylenes, Total	ND		50.0	50.0		ug/L		100	70 - 133	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	117		76 - 132
Toluene-d8 (Surr)	97		80 - 128

Lab Sample ID: MB 440-380937/4

Matrix: Water

Analysis Batch: 380937

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/10/17 10:02	1
Acrolein	ND		5.0	2.5	ug/L			01/10/17 10:02	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/10/17 10:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	107		80 - 128		01/10/17 10:02	1
Dibromofluoromethane (Surr)	102		76 - 132		01/10/17 10:02	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/10/17 10:02	1

Lab Sample ID: LCS 440-380937/5

Matrix: Water

Analysis Batch: 380937

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	23.9		ug/L		95	37 - 150
Acrolein	25.0	28.0		ug/L		112	10 - 145

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-380937/5
Matrix: Water
Analysis Batch: 380937

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acrylonitrile	250	244		ug/L		98	48 - 140
Surrogate	%Recovery	LCS Qualifier	Limits				
Toluene-d8 (Surr)	104		80 - 128				
Dibromofluoromethane (Surr)	103		76 - 132				
4-Bromofluorobenzene (Surr)	101		80 - 120				

Lab Sample ID: 440-172633-1 MS
Matrix: Water
Analysis Batch: 380937

Client Sample ID: Outfall009_20170109_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	23.1		ug/L		92	10 - 140
Acrolein	ND		25.0	21.6		ug/L		86	10 - 147
Acrylonitrile	ND		250	222		ug/L		89	38 - 144
Surrogate	%Recovery	MS Qualifier	Limits						
Toluene-d8 (Surr)	103		80 - 128						
Dibromofluoromethane (Surr)	102		76 - 132						
4-Bromofluorobenzene (Surr)	98		80 - 120						

Lab Sample ID: 440-172633-1 MSD
Matrix: Water
Analysis Batch: 380937

Client Sample ID: Outfall009_20170109_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
2-Chloroethyl vinyl ether	ND		25.0	24.7		ug/L		99	10 - 140	7	25
Acrolein	ND		25.0	26.8		ug/L		107	10 - 147	21	40
Acrylonitrile	ND		250	246		ug/L		98	38 - 144	10	40
Surrogate	%Recovery	MSD Qualifier	Limits								
Toluene-d8 (Surr)	104		80 - 128								
Dibromofluoromethane (Surr)	104		76 - 132								
4-Bromofluorobenzene (Surr)	99		80 - 120								

Lab Sample ID: MB 440-381161/4
Matrix: Water
Analysis Batch: 381161

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		2.0	0.88	ug/L			01/11/17 08:22	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120					01/11/17 08:22	1
Dibromofluoromethane (Surr)	102		76 - 132					01/11/17 08:22	1
Toluene-d8 (Surr)	107		80 - 128					01/11/17 08:22	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-381161/5

Matrix: Water

Analysis Batch: 381161

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	25.0	24.6		ug/L		98	52 - 130
Surrogate							
	%Recovery	Qualifier	Limits				
4-Bromofluorobenzene (Surr)	95		80 - 120				
Dibromofluoromethane (Surr)	104		76 - 132				
Toluene-d8 (Surr)	102		80 - 128				

Lab Sample ID: 440-172648-E-1 MS

Matrix: Water

Analysis Batch: 381161

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	ND		25.0	25.5		ug/L		102	52 - 130
Surrogate									
	%Recovery	Qualifier	Limits						
4-Bromofluorobenzene (Surr)	95		80 - 120						
Dibromofluoromethane (Surr)	103		76 - 132						
Toluene-d8 (Surr)	105		80 - 128						

Lab Sample ID: 440-172648-E-1 MSD

Matrix: Water

Analysis Batch: 381161

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Chloride	ND		25.0	26.6		ug/L		106	52 - 130	4	20
Surrogate											
	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	95		80 - 120								
Dibromofluoromethane (Surr)	105		76 - 132								
Toluene-d8 (Surr)	104		80 - 128								

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-381964/1-A

Matrix: Water

Analysis Batch: 382023

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 381964

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/14/17 07:05	01/14/17 12:27	1

Lab Sample ID: LCS 440-381964/2-A

Matrix: Water

Analysis Batch: 382023

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 381964

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	32.1		mg/L		80	78 - 114

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCSD 440-381964/3-A
 Matrix: Water
 Analysis Batch: 382023

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 381964

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	33.0		mg/L		83	78 - 114	3	11

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

GC/MS VOA

Analysis Batch: 380929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172633-1	Outfall009_20170109_Grab	Total/NA	Water	624	
440-172633-3	TB-20170109	Total/NA	Water	624	
MB 440-380929/5	Method Blank	Total/NA	Water	624	
LCS 440-380929/6	Lab Control Sample	Total/NA	Water	624	
440-172641-A-1 MS	Matrix Spike	Total/NA	Water	624	
440-172641-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 380937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172633-1	Outfall009_20170109_Grab	Total/NA	Water	624	
440-172633-3	TB-20170109	Total/NA	Water	624	
MB 440-380937/4	Method Blank	Total/NA	Water	624	
LCS 440-380937/5	Lab Control Sample	Total/NA	Water	624	
440-172633-1 MS	Outfall009_20170109_Grab	Total/NA	Water	624	
440-172633-1 MSD	Outfall009_20170109_Grab	Total/NA	Water	624	

Analysis Batch: 381161

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172633-3 - RA	TB-20170109	Total/NA	Water	624	
MB 440-381161/4	Method Blank	Total/NA	Water	624	
LCS 440-381161/5	Lab Control Sample	Total/NA	Water	624	
440-172648-E-1 MS	Matrix Spike	Total/NA	Water	624	
440-172648-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Prep Batch: 381964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172633-1	Outfall009_20170109_Grab	Total/NA	Water	1664A	
MB 440-381964/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-381964/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-381964/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 382023

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172633-1	Outfall009_20170109_Grab	Total/NA	Water	1664A	381964
MB 440-381964/1-A	Method Blank	Total/NA	Water	1664A	381964
LCS 440-381964/2-A	Lab Control Sample	Total/NA	Water	1664A	381964
LCSD 440-381964/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	381964

Biology

Analysis Batch: 381820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172633-1	Outfall009_20170109_Grab	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009-Grab

TestAmerica Job ID: 440-172633-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Human Fecal Toolbox ID™
Detection of the fecal Human gene biomarker for Human fecal contamination by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.
Date Received: January 11, 2017
Report Generated: January 26, 2017

SM #	Client #	Analysis Requested	Species	DNA Analytical Results
SM-7A11030	Outfall009_20170109_Grab	Human Bacteroidetes ID 1	Dorei	Absent

Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of Source Molecular Corporation, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to Source Molecular Corp. The company shall not be liable for any damages, either direct or consequential. Source Molecular Corp. provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact Source Molecular in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.



Laboratory Comments

Negative Results

In sample(s) classified as negative, the human-associated Bacteroidetes gene biomarker was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis. It is important to note that a negative result does not mean that the sample does not definitely have human fecal contamination. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution. In order to strengthen the result, a negative sample should be analyzed further for human fecal contamination with other DNA analytical tests. A list of human fecal ID tests can be found at www.sourcemolecular.com/human.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

Each submitted water sample was filtered through 0.45 micron membrane filters. Each filter was placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample was homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol.

Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing the sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. ' All assays were run in duplicate.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and to reveal any false negatives or false positives. The accumulation of PCR product is detected and graphed in an amplification plot. If the fecal indicator organism is absent in the sample, this accumulation is not detected and the sample is considered negative. If accumulation of PCR product is detected, the sample is considered positive.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

Human Bacteroidetes ID™ Species: *B. stercoris*,
Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

¹Boehm, A., Fuhman, J., Mrse, R., Grant, S. **Tiered approach for identification of a human fecal pollution source at a recreational beach: case study at Avalon Bay, Catalina Island, California.** Environ Sci Technol. 2003 37: 673–680.

²Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

³Bernhard, A., Field, K. **A PCR assay to discriminate human and ruminant feces on the basis of host differences in Bacteroides-Prevotella genes encoding 16S rRNA.** Appl. Environ. Microbiol. 2000b 66: 4571-4574.

⁴Ahmed, w., Masters, N., Toze, S. **Consistency in the host specificity and host sensitivity of the Bacteroides HF183 marker for sewage pollution tracking.** Lett. Appl. Microbiol. 2012 55: 283-289.

⁵Scott, T., Rose, J., Jenkins, T., Farrah, S., Lukasik, J. **Microbial Source Tracking: Current Methodology and Future Directions.** Appl. Environ. Microbiol. 2002 68: 5796-5803.

⁶Bernhard, A., Field, K. **Identification of nonpoint sources of fecal pollution in coastal waters by using host-specific 16S ribosomal DNA genetic markers from fecal anaerobes.** Appl. Environ. Microbiol. 2000a 66: 1587-1594.

⁷Fogarty, L., Voytek, M. **A Comparison of Bacteroides-Prevotella 16S rRNA Genetic Markers for Fecal Samples from Different Animal Species.** Appl. Environ. Microbiol. 2005 71: 5999-6007.

⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., et al. **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**

CHAIN OF CUSTODY FORM



440-172633 Chain of Custody

Client Name/Address:		Project:		Field Readings		Meter serial #						
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Boeing-SSFLNPDES Permit 2017 Annual Outfall 003-007, 009, 010 Outfall 009 Grab		Field Readings: (Include units) Time of Readings: 0900								
Test America Contact: Urvasi Patel 17461 Denton Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9056		Project Manager: Nancy Cardiner 619.286.7132, 858.337.4061 (cell)		pH 7.23 pH unit Temp 10.83 °C/F								
Sampler: Daniel Ear / M ARK DOMINIC		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Field readings QC Checked by: <i>[Signature]</i> Date/Time: 1-9-17/0917								
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED			Comments
Outfall 009	Outfall009_20170109_Grab	1/9/2017 0915	WM	125 mL Sterile Poly	1	None	5	No				Deliver to lab ASAP 8 hr hold time. Source Molecular
			WM	125 mL Sterile Poly	3	Na2S2O3	10	No				Deliver to lab ASAP 8 hr hold time. Need 1x, 10x, 100x dilutions
			WM	1 L Glass Amber	2	HCl	15	No				
			WM	40 mL VOA	3	HCl	40	No				
			WM	40 mL VOA	9	None	55	Yes				
			WM	1 L Glass Amber	2	HCl	15	No				
			WM	40 mL VOA	3	HCl	40	No				
			WM	40 mL VOA	3	None	55	No				
			WQ	40 mL VOA	2	HCl	40	No				
			WQ	40 mL VOA	2	None	55	No				
			Blank									
MST-Bacteroides, Human X E. coli (SM9221) X Oil & Grease (1864-HEM) X VOCs PP & xylenes, Freon 11 X VOCs (624) - only A+A + ZCVE X												
Requisitioned By: <i>[Signature]</i> Date/Time: 1-9-17/1215 Company: WESTON Requisitioned By: <i>[Signature]</i> Date/Time: 1-9-17/1420 Company: Requisitioned By: <i>[Signature]</i> Date/Time: 1-9-17/1420 Company:												
Legend: R = Routine, A = Annual Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____ Sample Integrity: (Check) Intact: _____ On Ice: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: _____												

2.5/20 3.6/3.1 3.4/2.9 2.4/1.9 2.0/2.1 2.0/1.5 2.9/2.5 2.2/1.7
12-77



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172633-1

Login Number: 172633

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-172760-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 2, 2017

MEC^x, Inc.
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Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MECX Project No.:** 1272.003H.01**Sample Delivery Group:** 440-172760-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170110 _Comp	440-172760-1	N/A	Water	1/10/2017 9:26:00 AM	E1613B, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E525.2, E608, E625, SM2540C/D, SM4500-CN-E, EPA 821/R-02-013, 100.2, SM2340B
Outfall009_20170110 _Comp_F	440-172760-2	N/A	Water	1/10/2017 9:26:00 AM	E200.7, E200.8, E245.1, SM2340B



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-172760-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.
- Although not requested on the COC, sample Outfall009_20170110_Comp was filtered at the laboratory and analyzed and reported for dissolved as well as total metals (methods 200.7, 200.8, 245.1). Both sample fractions were evaluated in this review.
- Analysis of asbestos (method 100.2) was subcontracted to LA Testing laboratory. The COC and sample receipt information for shipment of the sample was not included in the data package. No sample results were qualified.
- Analysis of chronic toxicity (bioassay method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers, and for all totals except total TCDD. Isomer results for the method blank contaminants detected below the reporting limit in the sample were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD and TCDF in the method blank were the same peaks comprising the totals in sample Outfall009_20170110_Comp. The results for totals HpCDD and TCDF were therefore qualified as nondetects (U) at the level of contamination. Remaining totals containing blank contamination were qualified as estimated (J).



III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL, or reported below the EDL, were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, the single result detected and reported below the EDL was subsequently qualified as a nondetect for method blank contamination.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Totals containing EMPC peaks were qualified as estimated (J).

Due to limited sample volume provided, the extracted sample volume of 968 milliliters was slightly less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.



IV. METHODS 200.7, 200.8, 245.1 AND SM2340B— METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^x reviewed the SDG on March 1, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 0 and DVP-21, Rev. 0)*, *EPA Methods 200.7, 200.8, and 245.1, Standard Method 2340B*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall009_20170110_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 9 days after receipt. All dissolved metals and mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples and laboratory control sample duplicate recoveries were within the method control limits of 85-115% and RPDs were $\leq 20\%$.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall009_20170110_Comp (total and dissolved metals for method 200.8, total metals for method 200.7). Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries for total aluminum (247%/275%), total calcium (MSD: 132%) and total iron (153%/163%) were above the control limit; therefore, results for total aluminum and total iron in sample Outfall009_20170110_Comp were qualified as estimated with a



potential high bias (J+). Total calcium was not a requested target analyte but is utilized in the calculation of total hardness. Total hardness was qualified as estimate with a positive bias (J+). Remaining recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

L. Calvin of MEC^X reviewed the SDG on March 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

V.1. HOLDING TIMES

Extraction and analytical holding times were met, with the exception of the PCB extraction performed two days beyond the seven-day holding time. PCB sample results, all nondetects, were qualified as estimated (UJ). The water sample for pesticides was extracted within seven days of collection and both samples were analyzed within 40 days of extraction.



V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$, with several exceptions: pesticide ICVs had %Ds outside of control limits for endrin aldehyde (16.3%) and three of five chlordane peaks (34.7%, -17.3%, and -21.7%), and the CCV %D for 4,4'-DDT (24.8%) exceeded the control limit. The PCB CCV %Ds for two of five Aroclor 1242 peaks exceeded the control limit. Results for the %D outliers, all nondetects, were qualified as estimated (UJ). The breakdown totals for endrin and 4,4'-DDT were $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. Method accuracy and precision were evaluated based on LCS/LCSD results.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.



Due to limited sample volume provided, the extracted sample volumes of 715 milliliters for pesticides and 965 milliliters for PCBs were less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VI. EPA METHOD 314.0 — PERCHLORATE

Marcia Hilchey of MEC^X reviewed the SDG on March 2, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Recoveries and the RPD were within method-established QC limits of 80-120% and $\leq 15\%$, respectively, except for the MSD recovery (122%). The sample result was a nondetect and was therefore not qualified.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with one exception noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$ with the following exceptions: the ICV $\%D$ for benzidine (26.7%) and CCV $\%Ds$ for benzo(b)fluoranthene and benzo(k)fluoranthene (20.3% and 22.2%, respectively) exceeded the control limit. The nondetected sample results for the $\%D$ outliers were qualified as estimated (UJ) in sample Outfall009_20170110_Comp.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG due to insufficient sample volume. MEC^X evaluated method accuracy and precision based on the LCS/LCSD results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

**VII.4.1 FIELD BLANKS AND EQUIPMENT BLANKS:**

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2 FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Results reported below the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 890 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 525.2*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VIII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.



VIII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. The sample was analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSD $\leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recoveries and RPDs were within the control limits of 70-130% and $\leq 30\%$, respectively.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within laboratory-established control limits of 70-130%.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG due to insufficient sample volume. MEC^x evaluated method accuracy and precision based on the LCS/LCSD results.

VIII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VIII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.



Due to limited sample volume provided, the extracted sample volume of 885 milliliters was less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 2, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 100.2, 218.6, 300.0 and 821-R-02-013, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IX.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for asbestos analysis past the 48 hour holding time and was analyzed 12 days past the required holding time. The laboratory subjected the sample to UV and ozonation to minimize bacteriological growth. The reviewer qualified the nondetect in the sample as an estimated nondetect (UJ), based on professional judgment. The remaining analytical holding times as listed below were met:

- 24 hours for hexavalent chromium
- 36 hours for chronic toxicity
- 48 hours for nitrate/nitrite as nitrogen
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for hexavalent chromium was within the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity. Calibration information was not provided for asbestos analysis.

IX.3. QUALITY CONTROL SAMPLES

IX.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.



IX.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

IX.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IX.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Outfall009_20170110_Comp for sulfate, chloride, fluoride, cyanide, and hexavalent chromium. Recoveries and RPDs were within the laboratory control limits. MS/MSD analysis was performed on a sample from another SDG for nitrate/nitrite as N.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No laboratory QC or raw data was presented in the SDG for asbestos analysis.

IX.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401727601

Analysis Method E1613B

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000052	0.00010	0.00000022	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000061	0.00010	0.00000026	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000017	0.000052	0.00000014	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000060	0.000052	0.00000028	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000003	0.000052	0.00000019	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000003	0.000052	0.00000017	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000002	0.000052	0.00000013	ug/L	J,DXqMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000001	0.000052	0.00000016	ug/L	J,DXqMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000003	0.000052	0.00000013	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000002	0.000052	0.00000014	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000003	0.000052	0.00000011	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000052	0.00000014	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000052	0.00000018	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000001	0.000052	0.00000014	ug/L	J,DXqMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000052	0.00000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000006	0.000010	0.00000012	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000011	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000020	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000041	0.000052	0.00000016	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000014	0.000052	0.00000028	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000015	0.000052	0.00000015	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000018	0.000052	0.00000012	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000052	0.00000014	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000052	0.00000018	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000010	0.000010	0.00000012	ug/L	J,DXqMB	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000020	ug/L	U	U	

Analysis Method E200.7

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	T	7429-90-5	750	50	25	ug/L		J+	Q
Aluminum	D	7429-90-5	150	50	25	ug/L	QP	R	*II
Arsenic	D	7440-38-2	10	10	5.0	ug/L	UQP	R	*II
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Beryllium	D	7440-41-7	2.0	2.0	1.0	ug/L	UQP	R	*II
Boron	T	7440-42-8	0.050	0.050	0.010	mg/L			
Boron	D	7440-42-8	0.051	0.050	0.010	mg/L	QP	R	*II
Calcium	D	7440-70-2	7.4	0.10	0.050	mg/L	QP	R	*II
Chromium	D	7440-47-3	5.0	5.0	2.5	ug/L	UQP	R	*II
Chromium	T	7440-47-3	ND	5.0	2.5	ug/L	U	U	
Iron	D	7439-89-6	0.19	0.040	0.010	mg/L	QP	R	*II
Iron	T	7439-89-6	0.86	0.040	0.010	mg/L		J+	Q
Magnesium	D	7439-95-4	2.1	0.020	0.010	mg/L	QP	R	*II
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Nickel	D	7440-02-0	10	10	5.0	ug/L	UQP	R	*II
Vanadium	T	7440-62-2	ND	10	5.0	ug/L	U	U	
Vanadium	D	7440-62-2	10	10	5.0	ug/L	UQP	R	*II
Zinc	D	7440-66-6	12	20	10	ug/L	J,DXQP	R	*II

Analysis Method E200.7

Zinc	T	7440-66-6	17	20	10	ug/L	J,DX	J	DNQ
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Sample Name Outfall009_20170110_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Aluminum	D	7429-90-5	180	50	25	ug/L	QP	J	H
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Boron	D	7440-42-8	0.051	0.050	0.010	mg/L	QP	J	H
Calcium	D	7440-70-2	7.3	0.10	0.050	mg/L	QP	J	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	0.16	0.040	0.010	mg/L	QP	J	H
Magnesium	D	7439-95-4	2.1	0.020	0.010	mg/L	QP	J	H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.77	2.0	0.50	ug/L	J,DX	J	DNQ
Antimony	D	7440-36-0	0.68	2.0	0.50	ug/L	J,DXQP	R	*II
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Cadmium	D	7440-43-9	1.0	1.0	0.25	ug/L	UQP	R	*II
Copper	D	7440-50-8	3.9	2.0	0.50	ug/L	QP	R	*II
Copper	T	7440-50-8	4.9	2.0	0.50	ug/L			
Lead	T	7439-92-1	2.4	1.0	0.50	ug/L			
Lead	D	7439-92-1	0.63	1.0	0.50	ug/L	J,DXQP	R	*II
Selenium	D	7782-49-2	2.0	2.0	0.50	ug/L	UQP	R	*II
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Silver	D	7440-22-4	1.0	1.0	0.50	ug/L	UQP	R	*II
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Analysis Method E200.8

Thallium	D	7440-28-0	1.0	1.0	0.50	ug/L	UQP	R	*II
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Sample Name Outfall009_20170110_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.68	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	4.0	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	0.61	1.0	0.50	ug/L	J,DXQP	J	DNQ, H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	U	U	

Analysis Method E245.1

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	0.20	0.20	0.10	ug/L	UQP	R	*II
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	UIB	U	

Sample Name Outfall009_20170110_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	0.10	0.20	0.10	ug/L	J,DXQP	J	DNQ, H

Analysis Method E300**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.3	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.52	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	4.9	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E525.2**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	ND	1.1	0.56	ug/L	U	U	
Diazinon	N	333-41-5	ND	0.28	0.14	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0070	0.0056	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0070	0.0042	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.014	0.0056	ug/L	U	UJ	C
Aldrin	N	309-00-2	ND	0.0070	0.0021	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0070	0.0035	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.52	0.26	ug/L	UBU	UJ	H

Analysis Method E608

Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.52	0.26	ug/L	UBU	UJ	H
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.52	0.26	ug/L	UBU	UJ	H
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.52	0.26	ug/L	UBU	UJ	C, H
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.52	0.26	ug/L	UBU	UJ	H
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.52	0.26	ug/L	UBU	UJ	H
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.52	0.26	ug/L	UBU	UJ	H
beta-BHC	N	319-85-7	ND	0.014	0.0056	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.14	0.11	ug/L	U	UJ	C
delta-BHC	N	319-86-8	ND	0.0070	0.0049	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0070	0.0028	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0070	0.0042	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0070	0.0028	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.014	0.0042	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0070	0.0028	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.014	0.0028	ug/L	U	UJ	C
gamma-BHC (Lindane)	N	58-89-9	ND	0.014	0.0042	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.014	0.0042	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0070	0.0035	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.70	0.35	ug/L	U	U	

Analysis Method E625

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	1.12	0.562	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.562	0.225	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	1.12	0.562	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.562	0.225	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.562	0.225	ug/L	U	U	
2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.562	0.225	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	1.12	0.562	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	2.25	1.12	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	2.25	1.12	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	5.62	2.25	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.62	2.25	ug/L	U	U	

Analysis Method E625

2,6-Dinitrotoluene	N	606-20-2	ND	5.62	2.25	ug/L	U	U
2-Chloronaphthalene	N	91-58-7	ND	0.562	0.225	ug/L	U	U
2-Chlorophenol	N	95-57-8	ND	1.12	0.562	ug/L	U	U
2-Nitrophenol	N	88-75-5	ND	2.25	1.12	ug/L	U	U
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.62	2.25	ug/L	U	U
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	5.62	2.25	ug/L	U	U
4-Bromophenyl phenyl ether	N	101-55-3	ND	1.12	0.562	ug/L	U	U
4-Chloro-3-methylphenol	N	59-50-7	ND	2.25	0.225	ug/L	U	U
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.562	0.225	ug/L	U	U
4-Nitrophenol	N	100-02-7	ND	5.62	2.25	ug/L	U	U
Acenaphthene	N	83-32-9	ND	0.562	0.225	ug/L	U	U
Acenaphthylene	N	208-96-8	ND	0.562	0.225	ug/L	U	U
Anthracene	N	120-12-7	ND	0.562	0.225	ug/L	U	U
Benzidine	N	92-87-5	ND	11.2	5.62	ug/L	U	UJ C
Benzo(a)anthracene	N	56-55-3	ND	5.62	2.25	ug/L	U	U
Benzo(a)pyrene	N	50-32-8	ND	2.25	0.562	ug/L	U	U
Benzo(b)fluoranthene	N	205-99-2	ND	2.25	1.12	ug/L	U	UJ C
Benzo(g,h,i)perylene	N	191-24-2	ND	5.62	2.25	ug/L	U	U
Benzo(k)fluoranthene	N	207-08-9	ND	0.562	0.281	ug/L	U	UJ C
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.562	0.225	ug/L	U	U
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.562	0.225	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.62	2.25	ug/L	U	U
Butyl benzylphthalate	N	85-68-7	ND	5.62	2.25	ug/L	U	U
Chrysene	N	218-01-9	ND	0.562	0.225	ug/L	U	U
Dibenz(a,h)anthracene	N	53-70-3	ND	0.562	0.281	ug/L	U	U
Diethyl phthalate	N	84-66-2	ND	1.12	0.562	ug/L	U	U
Dimethyl phthalate	N	131-11-3	ND	0.562	0.281	ug/L	U	U
Di-n-butylphthalate	N	84-74-2	ND	2.25	1.12	ug/L	U	U
Di-n-octyl phthalate	N	117-84-0	ND	5.62	2.25	ug/L	U	U
Fluoranthene	N	206-44-0	ND	0.562	0.225	ug/L	U	U
Fluorene	N	86-73-7	ND	0.562	0.225	ug/L	U	U
Hexachlorobenzene	N	118-74-1	ND	1.12	0.562	ug/L	U	U
Hexachlorobutadiene	N	87-68-3	ND	2.25	0.562	ug/L	U	U
Hexachlorocyclopentadiene	N	77-47-4	ND	5.62	2.25	ug/L	U	U
Hexachloroethane	N	67-72-1	ND	3.37	0.562	ug/L	U	U

Analysis Method E625

Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	2.25	1.12	ug/L	U	U
Isophorone	N	78-59-1	ND	1.12	0.562	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.12	0.562	ug/L	U	U
Nitrobenzene	N	98-95-3	ND	1.12	0.562	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	2.25	1.12	ug/L	U	U
N-Nitrosodi-n-propylamine	N	621-64-7	ND	2.25	1.12	ug/L	U	U
N-Nitrosodiphenylamine	N	86-30-6	ND	1.12	0.562	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	2.25	1.12	ug/L	U	U
Phenanthrene	N	85-01-8	ND	0.562	0.225	ug/L	U	U
Phenol	N	108-95-2	ND	1.12	0.562	ug/L	U	U
Pyrene	N	129-00-0	ND	0.562	0.225	ug/L	U	U

Analysis Method EPA100.2

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Asbestos	N	1332-21-4				MFL	U	UJ	H

Analysis Method EPA-821-R-02-013

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	17.98			% SURV			

Analysis Method SM2340

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	N	HARDNESSCA CO3	29			mg/L		R	*II
Hardness as CaCO3	T	HARDNESSCA CO3	29	0.33	0.17	mg/L		J+	L

Analysis Method SM2340**Sample Name** Outfall009_20170110_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	27	0.33	0.17	mg/L		J	H

Analysis Method SM2540C**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	65	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	6.9	1.0	0.50	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/10/2017 9:26:00 AM **Validation Level:** 8**Lab Sample Name:** 440-172760-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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Tel: (949)261-1022

TestAmerica Job ID: 440-172760-1

Client Project/Site: Boeing NPDES SSFL outfalls

Revision: 2

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/27/2017 10:09:01 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/27/2017 10:09:01 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-172760-1	Outfall009_20170110_Comp	Water	01/10/17 09:26	01/10/17 15:55
440-172760-2	Outfall009_20170110_Comp_F	Water	01/10/17 09:26	01/10/17 15:55

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Job ID: 440-172760-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-172760-1

Comments

Revision created to add Hardness Calc.
Dissolved metals were reported twice so one set was removed.

Receipt

The samples were received on 1/10/2017 3:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 0.7° C, 1.6° C, 1.6° C, 2.0° C, 2.2° C, 2.6° C and 3.2° C.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-382196 and analytical batch 440-384955. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-384955 recovered above the upper control limit for benzo(b)fluoranthene and benzo(k)fluoranthene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-382196 and analytical batch 440-382995. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 440-381160 and analytical batch 440-381816. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 608: The continuing calibration verification (CCV) associated with batch 440-381816 recovered above the upper control limit for 4,4'-DDT and Methoxychlor. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall009_20170110_Comp (440-172760-1) and (CCVIS 440-381816/7).

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-383089 and analytical batch 440-383111. See LCS and LCSD. (LCS 440-383089/4-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

Method(s) 1613B: The following sample have one or more analytes with a concentration less than the corresponding estimated detection limit (EDL): Outfall009_20170110_Comp (440-172760-1). The associated peaks elute at the correct retention time for both characteristic ions and have a signal to noise ratio greater than the method required 2.5:1; therefore, per client request, the detections have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Job ID: 440-172760-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Metals

Method(s) 245.1: The continuing calibration verification (CCV) associated with batch 381804 recovered above the upper control limit for Mercury. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall009_20170110_Comp (440-172760-1) and (440-172826-F-5-A).

Method(s) 200.2: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-383199 and 440-383681.

Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-383495 and analytical batch 440-384070 were outside control limits for Aluminum, Calcium and Iron. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 525.2: Elevated reporting limits are provided for the following sample due to insufficient sample provided for preparation: Outfall009_20170110_Comp (440-172760-1).

Method(s) 608: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 8081<CHOOSE_ONE> preparation/analysis: Outfall009_20170110_Comp (440-172760-1).

Method(s) 625: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 3520C preparation/analysis: Outfall009_20170110_Comp (440-172760-1).

Method(s) 608: The following sample for the 608 PCB preparation/analysis was added in outside of holding time: Outfall009_20170110_Comp (440-172760-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic Cerio, EPA/821-R02-013: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Method Asbestos 100.2: This method was subcontracted to LA Testing. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.1	0.56	ug/L		01/11/17 06:33	01/11/17 10:41	1
Diazinon	ND		0.28	0.14	ug/L		01/11/17 06:33	01/11/17 10:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	97		70 - 130				01/11/17 06:33	01/11/17 10:41	1
Perylene-d12	92		70 - 130				01/11/17 06:33	01/11/17 10:41	1
Triphenylphosphate	130		70 - 130				01/11/17 06:33	01/11/17 10:41	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Acenaphthylene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Anthracene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Benzidine	ND		11.2	5.62	ug/L		01/16/17 09:47	01/18/17 21:16	1
Benzo[a]anthracene	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
Benzo[b]fluoranthene	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
Benzo[k]fluoranthene	ND		0.562	0.281	ug/L		01/16/17 09:47	01/28/17 01:33	1
Benzo[a]pyrene	ND		2.25	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Bis(2-chloroethoxy)methane	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Bis(2-chloroethyl)ether	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Bis(2-ethylhexyl) phthalate	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
4-Bromophenyl phenyl ether	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Butyl benzyl phthalate	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
4-Chloro-3-methylphenol	ND		2.25	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
2-Chloronaphthalene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
2-Chlorophenol	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
4-Chlorophenyl phenyl ether	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Chrysene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Dibenz(a,h)anthracene	ND		0.562	0.281	ug/L		01/16/17 09:47	01/28/17 01:33	1
Di-n-butyl phthalate	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
1,2-Dichlorobenzene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
1,3-Dichlorobenzene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
1,4-Dichlorobenzene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
3,3'-Dichlorobenzidine	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
2,4-Dichlorophenol	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
Diethyl phthalate	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
2,4-Dimethylphenol	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
Dimethyl phthalate	ND		0.562	0.281	ug/L		01/16/17 09:47	01/28/17 01:33	1
4,6-Dinitro-2-methylphenol	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
2,4-Dinitrophenol	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
2,4-Dinitrotoluene	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
2,6-Dinitrotoluene	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
Di-n-octyl phthalate	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Fluoranthene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Fluorene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Hexachlorobenzene	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Hexachlorobutadiene	ND		2.25	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Hexachloroethane	ND		3.37	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorocyclopentadiene	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
Indeno[1,2,3-cd]pyrene	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
Isophorone	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Naphthalene	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Nitrobenzene	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
2-Nitrophenol	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
4-Nitrophenol	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
N-Nitrosodimethylamine	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
N-Nitrosodiphenylamine	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
N-Nitrosodi-n-propylamine	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
Pentachlorophenol	ND		2.25	1.12	ug/L		01/16/17 09:47	01/28/17 01:33	1
Phenanthrene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
Phenol	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Pyrene	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1
1,2,4-Trichlorobenzene	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
2,4,6-Trichlorophenol	ND		1.12	0.562	ug/L		01/16/17 09:47	01/28/17 01:33	1
Benzo[g,h,i]perylene	ND		5.62	2.25	ug/L		01/16/17 09:47	01/28/17 01:33	1
bis (2-chloroisopropyl) ether	ND		0.562	0.225	ug/L		01/16/17 09:47	01/28/17 01:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	72		50 - 120	01/16/17 09:47	01/28/17 01:33	1
2-Fluorophenol	61		30 - 120	01/16/17 09:47	01/28/17 01:33	1
2,4,6-Tribromophenol	80		40 - 120	01/16/17 09:47	01/28/17 01:33	1
Nitrobenzene-d5	71		45 - 120	01/16/17 09:47	01/28/17 01:33	1
Terphenyl-d14	75		37 - 144	01/16/17 09:47	01/28/17 01:33	1
Phenol-d6	72		35 - 120	01/16/17 09:47	01/28/17 01:33	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1
Aroclor 1221	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1
Aroclor 1232	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1
Aroclor 1242	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1
Aroclor 1248	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1
Aroclor 1254	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1
Aroclor 1260	ND	BU	0.52	0.26	ug/L		01/19/17 07:40	01/19/17 23:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	43		29 - 115	01/19/17 07:40	01/19/17 23:07	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0070	0.0021	ug/L		01/11/17 06:37	01/14/17 00:22	1
alpha-BHC	ND		0.0070	0.0035	ug/L		01/11/17 06:37	01/14/17 00:22	1
beta-BHC	ND		0.014	0.0056	ug/L		01/11/17 06:37	01/14/17 00:22	1
Chlordane (technical)	ND		0.14	0.11	ug/L		01/11/17 06:37	01/14/17 00:22	1
delta-BHC	ND		0.0070	0.0049	ug/L		01/11/17 06:37	01/14/17 00:22	1
Dieldrin	ND		0.0070	0.0028	ug/L		01/11/17 06:37	01/14/17 00:22	1
Endosulfan I	ND		0.0070	0.0042	ug/L		01/11/17 06:37	01/14/17 00:22	1
Endosulfan II	ND		0.0070	0.0028	ug/L		01/11/17 06:37	01/14/17 00:22	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		0.014	0.0042	ug/L		01/11/17 06:37	01/14/17 00:22	1
Endrin	ND		0.0070	0.0028	ug/L		01/11/17 06:37	01/14/17 00:22	1
Endrin aldehyde	ND		0.014	0.0028	ug/L		01/11/17 06:37	01/14/17 00:22	1
gamma-BHC (Lindane)	ND		0.014	0.0042	ug/L		01/11/17 06:37	01/14/17 00:22	1
Heptachlor	ND		0.014	0.0042	ug/L		01/11/17 06:37	01/14/17 00:22	1
Heptachlor epoxide	ND		0.0070	0.0035	ug/L		01/11/17 06:37	01/14/17 00:22	1
Toxaphene	ND		0.70	0.35	ug/L		01/11/17 06:37	01/14/17 00:22	1
4,4'-DDD	ND		0.0070	0.0056	ug/L		01/11/17 06:37	01/14/17 00:22	1
4,4'-DDE	ND		0.0070	0.0042	ug/L		01/11/17 06:37	01/14/17 00:22	1
4,4'-DDT	ND		0.014	0.0056	ug/L		01/11/17 06:37	01/14/17 00:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	48		10 - 150				01/11/17 06:37	01/14/17 00:22	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			01/10/17 18:39	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.3		0.50	0.25	mg/L			01/10/17 19:08	1
Fluoride	ND		0.50	0.25	mg/L			01/10/17 19:08	1
Sulfate	4.9		0.50	0.25	mg/L			01/10/17 19:08	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/11/17 12:11	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.52		0.15	0.070	mg/L			01/20/17 12:41	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,7,8-PeCDD	ND		0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,7,8-PeCDF	ND		0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
2,3,4,7,8-PeCDF	ND		0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,4,7,8-HxCDD	0.00000025	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,6,7,8-HxCDD	0.00000035	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,7,8,9-HxCDD	0.00000038	J,DX MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,4,7,8-HxCDF	0.00000034	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,6,7,8-HxCDF	0.00000019	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	0.0000022	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
2,3,4,6,7,8-HxCDF	0.0000013	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,4,6,7,8-HpCDD	0.0000060	J,DX MB	0.000052	0.0000002	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,4,6,7,8-HpCDF	0.0000017	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
1,2,3,4,7,8,9-HpCDF	0.0000030	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
OCDD	0.000061	J,DX MB	0.00010	0.0000002	ug/L		01/13/17 08:17	01/14/17 03:14	1
OCDF	0.0000052	J,DX MB	0.00010	0.0000002	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total TCDD	ND		0.000010	0.0000002	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total TCDF	0.0000010	J,DX q MB	0.000010	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total PeCDD	ND		0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total PeCDF	ND		0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total HxCDD	0.0000018	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total HxCDF	0.0000015	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total HpCDD	0.000014	J,DX MB	0.000052	0.0000002	ug/L		01/13/17 08:17	01/14/17 03:14	1
Total HpCDF	0.0000041	J,DX q MB	0.000052	0.0000001	ug/L		01/13/17 08:17	01/14/17 03:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	73		25 - 164	01/13/17 08:17	01/14/17 03:14	1
13C-2,3,7,8-TCDF	73		24 - 169	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,7,8-PeCDD	82		25 - 181	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,7,8-PeCDF	74		24 - 185	01/13/17 08:17	01/14/17 03:14	1
13C-2,3,4,7,8-PeCDF	87		21 - 178	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,4,7,8-HxCDD	91		32 - 141	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,6,7,8-HxCDD	90		28 - 130	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,4,7,8-HxCDF	92		26 - 152	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,6,7,8-HxCDF	88		26 - 123	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,7,8,9-HxCDF	82		29 - 147	01/13/17 08:17	01/14/17 03:14	1
13C-2,3,4,6,7,8-HxCDF	88		28 - 136	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,4,6,7,8-HpCDD	90		23 - 140	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,4,6,7,8-HpCDF	97		28 - 143	01/13/17 08:17	01/14/17 03:14	1
13C-1,2,3,4,7,8,9-HpCDF	89		26 - 138	01/13/17 08:17	01/14/17 03:14	1
13C-OCDD	83		17 - 157	01/13/17 08:17	01/14/17 03:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/13/17 08:17	01/14/17 03:14	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000011	ug/L		01/13/17 08:17	01/16/17 16:01	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	76		24 - 169	01/13/17 08:17	01/16/17 16:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197	01/13/17 08:17	01/16/17 16:01	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	750		50	25	ug/L		01/20/17 13:17	01/24/17 09:56	1
Arsenic	ND		10	5.0	ug/L		01/20/17 13:17	01/24/17 09:56	1
Boron	0.050		0.050	0.010	mg/L		01/20/17 13:17	01/24/17 09:56	1
Beryllium	ND		2.0	1.0	ug/L		01/20/17 13:17	01/24/17 09:56	1
Chromium	ND		5.0	2.5	ug/L		01/20/17 13:17	01/24/17 09:56	1
Iron	0.86		0.040	0.010	mg/L		01/20/17 13:17	01/24/17 09:56	1
Nickel	ND		10	5.0	ug/L		01/20/17 13:17	01/24/17 09:56	1
Vanadium	ND		10	5.0	ug/L		01/20/17 13:17	01/24/17 09:56	1
Zinc	17	J,DX	20	10	ug/L		01/20/17 13:17	01/24/17 09:56	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/20/17 13:07	01/23/17 14:06	1
Copper	4.9		2.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:06	1
Lead	2.4		1.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:06	1
Antimony	0.77	J,DX	2.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:06	1
Selenium	ND		2.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:06	1
Thallium	ND		1.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:06	1
Silver	ND		1.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:06	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB	0.20	0.10	ug/L		01/12/17 15:50	01/13/17 05:29	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		01/19/17 22:39	01/21/17 01:46	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	29		0.33	0.17	mg/L			02/19/17 23:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	65		10	5.0	mg/L			01/12/17 08:00	1
Total Suspended Solids	6.9		1.0	0.50	mg/L			01/16/17 17:06	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/12/17 16:33	01/15/17 20:38	1

Client Sample ID: Outfall009_20170110_Comp_F

Lab Sample ID: 440-172760-2

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	180	QP	50	25	ug/L		01/22/17 11:04	01/24/17 11:56	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp_F

Lab Sample ID: 440-172760-2

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		01/22/17 11:04	01/24/17 11:56	1
Boron	0.051	QP	0.050	0.010	mg/L		01/22/17 11:04	01/24/17 11:56	1
Beryllium	ND	QP	2.0	1.0	ug/L		01/22/17 11:04	01/24/17 11:56	1
Chromium	ND	QP	5.0	2.5	ug/L		01/22/17 11:04	01/24/17 11:56	1
Iron	0.16	QP	0.040	0.010	mg/L		01/22/17 11:04	01/25/17 14:17	1
Nickel	ND	QP	10	5.0	ug/L		01/22/17 11:04	01/24/17 11:56	1
Vanadium	ND	QP	10	5.0	ug/L		01/22/17 11:04	01/24/17 11:56	1
Zinc	ND	QP	20	10	ug/L		01/22/17 11:04	01/24/17 11:56	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/19/17 15:47	01/19/17 17:10	1
Copper	4.0	QP	2.0	0.50	ug/L		01/19/17 15:47	01/19/17 17:10	1
Lead	0.61	J,DX QP	1.0	0.50	ug/L		01/19/17 15:47	01/19/17 17:10	1
Antimony	0.68	J,DX QP	2.0	0.50	ug/L		01/19/17 15:47	01/19/17 17:10	1
Selenium	ND	QP	2.0	0.50	ug/L		01/19/17 15:47	01/19/17 17:10	1
Thallium	ND	QP	1.0	0.50	ug/L		01/19/17 15:47	01/19/17 17:10	1
Silver	ND	QP	1.0	0.50	ug/L		01/19/17 15:47	01/19/17 17:10	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.10	J,DX QP	0.20	0.10	ug/L		01/19/17 22:39	01/21/17 01:38	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	27		0.33	0.17	mg/L			02/19/17 23:49	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
Asbestos 100.2	EPA 100.2 Asbestos in Drinking Water	NONE	LA Testing
Chronic Cerio, EPA/821-R02-013	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			885 mL	1 mL	380936	01/11/17 06:33	FTD	TAL IRV
Total/NA	Analysis	525.2		1			381159	01/11/17 10:41	MF	TAL IRV
Total/NA	Prep	625			890 mL	2.0 mL	382196	01/16/17 09:47	BMN	TAL IRV
Total/NA	Analysis	625		1			382995	01/18/17 21:16	DF	TAL IRV
Total/NA	Prep	625			890 mL	2.0 mL	382196	01/16/17 09:47	BMN	TAL IRV
Total/NA	Analysis	625		1			384955	01/28/17 01:33	DF	TAL IRV
Total/NA	Prep	608			965 mL	2 mL	383089	01/19/17 07:40	L2A	TAL IRV
Total/NA	Analysis	608 PCB LL		1			383111	01/19/17 23:07	JM	TAL IRV
Total/NA	Prep	608			715 mL	2 mL	381160	01/11/17 06:37	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			381816	01/14/17 00:22	KS	TAL IRV
Total/NA	Analysis	218.6		1			380922	01/10/17 18:39	RW	TAL IRV
Total/NA	Analysis	300.0		1			381020	01/10/17 19:08	NTN	TAL IRV
Total/NA	Analysis	314.0		1			381195	01/11/17 12:11	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			383487	01/20/17 12:41	TLN	TAL IRV
Total/NA	Prep	1613B			968.3 mL	20 uL	146219	01/13/17 08:17	DXD	TAL SAC
Total/NA	Analysis	1613B		1			146365	01/14/17 03:14	SMA	TAL SAC
Total/NA	Prep	1613B	RA		968.3 mL	20 uL	146219	01/13/17 08:17	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			146574	01/16/17 16:01	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	383495	01/20/17 13:17	IH1	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			384070	01/24/17 09:56	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	383491	01/20/17 13:07	IH1	TAL IRV
Total Recoverable	Analysis	200.8		1			383908	01/23/17 14:06	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	383199	01/19/17 13:15	B1H	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	383325	01/19/17 22:39	DB	TAL IRV
Dissolved	Analysis	245.1		1			383867	01/21/17 01:46	DB	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	381579	01/12/17 15:50	DB	TAL IRV
Total/NA	Analysis	245.1		1			381804	01/13/17 05:29	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			389185	02/19/17 23:47	A1S	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	381397	01/12/17 08:00	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	382351	01/16/17 17:06	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	381370	01/12/17 16:33	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			382133	01/15/17 20:38	SN	TAL IRV

Client Sample ID: Outfall009_20170110_Comp_F

Lab Sample ID: 440-172760-2

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	383199	01/19/17 13:15	B1H	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	383681	01/22/17 11:04	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			384077	01/24/17 11:56	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	383199	01/19/17 13:15	B1H	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	383681	01/22/17 11:04	Q1N	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Client Sample ID: Outfall009_20170110_Comp_F

Lab Sample ID: 440-172760-2

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	200.7 Rev 4.4		1			384391	01/25/17 14:17	VS	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	383199	01/19/17 13:15	B1H	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	383252	01/19/17 15:47	IH1	TAL IRV
Dissolved	Analysis	200.8		1			383278	01/19/17 17:10	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	383199	01/19/17 13:15	B1H	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	383325	01/19/17 22:39	DB	TAL IRV
Dissolved	Analysis	245.1		1			383867	01/21/17 01:38	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			389186	02/19/17 23:49	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

LA Testing = LA Testing, 520 Mission Street, South Pasadena, CA 91030

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-380936/1-A
Matrix: Water
Analysis Batch: 381159

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 380936

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		01/10/17 07:30	01/11/17 06:59	1
Diazinon	ND		0.25	0.12	ug/L		01/10/17 07:30	01/11/17 06:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	95		70 - 130	01/10/17 07:30	01/11/17 06:59	1
Perylene-d12	93		70 - 130	01/10/17 07:30	01/11/17 06:59	1
Triphenylphosphate	90		70 - 130	01/10/17 07:30	01/11/17 06:59	1

Lab Sample ID: LCS 440-380936/2-A
Matrix: Water
Analysis Batch: 381159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 380936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	4.68		ug/L		94	70 - 130
Diazinon	5.00	3.99		ug/L		80	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	94		70 - 130
Perylene-d12	93		70 - 130
Triphenylphosphate	115		70 - 130

Lab Sample ID: LCSD 440-380936/3-A
Matrix: Water
Analysis Batch: 381159

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 380936

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	5.24		ug/L		105	70 - 130	11	30
Diazinon	5.00	4.07		ug/L		81	70 - 130	2	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	95		70 - 130
Perylene-d12	94		70 - 130
Triphenylphosphate	105		70 - 130

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-382196/1-A
Matrix: Water
Analysis Batch: 382995

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzidine	ND		10.0	5.00	ug/L		01/16/17 09:47	01/18/17 18:26	1

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-382196/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Anthracene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/16/17 09:47	01/27/17 20:46	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Chrysene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/16/17 09:47	01/27/17 20:46	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/16/17 09:47	01/27/17 20:46	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Fluoranthene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Fluorene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Isophorone	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Naphthalene	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-382196/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 382196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
Phenanthrene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
Phenol	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Pyrene	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/16/17 09:47	01/27/17 20:46	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/16/17 09:47	01/27/17 20:46	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/16/17 09:47	01/27/17 20:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	72		50 - 120	01/16/17 09:47	01/27/17 20:46	1
2-Fluorophenol	64		30 - 120	01/16/17 09:47	01/27/17 20:46	1
2,4,6-Tribromophenol	59		40 - 120	01/16/17 09:47	01/27/17 20:46	1
Nitrobenzene-d5	70		45 - 120	01/16/17 09:47	01/27/17 20:46	1
Terphenyl-d14	83		37 - 144	01/16/17 09:47	01/27/17 20:46	1
Phenol-d6	70		35 - 120	01/16/17 09:47	01/27/17 20:46	1

Lab Sample ID: LCS 440-382196/2-A
Matrix: Water
Analysis Batch: 382995

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzidine	10.0	5.960	J,DX	ug/L		60	5 - 66

Lab Sample ID: LCS 440-382196/2-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	6.927		ug/L		69	47 - 145
Acenaphthylene	10.0	6.906		ug/L		69	33 - 145
Anthracene	10.0	7.335		ug/L		73	27 - 133
Benzo[a]anthracene	10.0	7.694		ug/L		77	33 - 143
Benzo[b]fluoranthene	10.0	8.209		ug/L		82	24 - 150
Benzo[k]fluoranthene	10.0	8.158		ug/L		82	11 - 150
Benzo[a]pyrene	10.0	7.560		ug/L		76	17 - 150
Bis(2-chloroethoxy)methane	10.0	6.703		ug/L		67	33 - 150
Bis(2-chloroethyl)ether	10.0	6.443		ug/L		64	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	7.872		ug/L		79	10 - 150
4-Bromophenyl phenyl ether	10.0	7.078		ug/L		71	53 - 127
Butyl benzyl phthalate	10.0	7.935		ug/L		79	10 - 150
4-Chloro-3-methylphenol	10.0	7.018		ug/L		70	22 - 147
2-Chloronaphthalene	10.0	6.565		ug/L		66	60 - 118
2-Chlorophenol	10.0	6.230		ug/L		62	23 - 134
4-Chlorophenyl phenyl ether	10.0	6.930		ug/L		69	25 - 150
Chrysene	10.0	7.676		ug/L		77	17 - 150
Dibenz(a,h)anthracene	10.0	8.257		ug/L		83	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-382196/2-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 382196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Di-n-butyl phthalate	10.0	7.552		ug/L		76	10 - 118
1,2-Dichlorobenzene	10.0	5.546		ug/L		55	32 - 129
1,3-Dichlorobenzene	10.0	5.322		ug/L		53	10 - 150
1,4-Dichlorobenzene	10.0	5.359		ug/L		54	20 - 124
3,3'-Dichlorobenzidine	10.0	7.378		ug/L		74	10 - 150
2,4-Dichlorophenol	10.0	6.571		ug/L		66	39 - 135
Diethyl phthalate	10.0	7.810		ug/L		78	10 - 114
2,4-Dimethylphenol	10.0	6.505		ug/L		65	32 - 119
Dimethyl phthalate	10.0	7.632		ug/L		76	10 - 112
4,6-Dinitro-2-methylphenol	20.0	12.89		ug/L		64	10 - 150
2,4-Dinitrophenol	20.0	12.51		ug/L		63	50 - 150
2,4-Dinitrotoluene	10.0	7.557		ug/L		76	39 - 139
2,6-Dinitrotoluene	10.0	7.137		ug/L		71	50 - 150
Di-n-octyl phthalate	10.0	7.646		ug/L		76	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	7.539		ug/L		75	47 - 116
Fluoranthene	10.0	7.515		ug/L		75	26 - 137
Fluorene	10.0	7.213		ug/L		72	59 - 121
Hexachlorobenzene	10.0	6.753		ug/L		68	10 - 150
Hexachlorobutadiene	10.0	4.845		ug/L		48	24 - 116
Hexachloroethane	10.0	4.866		ug/L		49	40 - 113
Hexachlorocyclopentadiene	10.0	2.670	J,DX	ug/L		27	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	7.670		ug/L		77	10 - 150
Isophorone	10.0	6.867		ug/L		69	21 - 150
Naphthalene	10.0	6.142		ug/L		61	21 - 133
Nitrobenzene	10.0	6.572		ug/L		66	35 - 150
2-Nitrophenol	10.0	6.424		ug/L		64	29 - 150
4-Nitrophenol	20.0	14.76		ug/L		74	10 - 132
N-Nitrosodimethylamine	10.0	6.385		ug/L		64	26 - 117
N-Nitrosodiphenylamine	10.0	6.933		ug/L		69	54 - 110
N-Nitrosodi-n-propylamine	10.0	6.604		ug/L		66	10 - 150
Pentachlorophenol	20.0	13.87		ug/L		69	14 - 150
Phenanthrene	10.0	7.329		ug/L		73	54 - 120
Phenol	10.0	6.516		ug/L		65	10 - 112
Pyrene	10.0	7.616		ug/L		76	52 - 115
1,2,4-Trichlorobenzene	10.0	5.700		ug/L		57	44 - 142
2,4,6-Trichlorophenol	10.0	6.752		ug/L		68	37 - 144
Benzo[g,h,i]perylene	10.0	7.617		ug/L		76	10 - 150
bis (2-chloroisopropyl) ether	10.0	6.255		ug/L		63	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	68		50 - 120
2-Fluorophenol	56		30 - 120
2,4,6-Tribromophenol	69		40 - 120
Nitrobenzene-d5	66		45 - 120
Terphenyl-d14	80		37 - 144
Phenol-d6	65		35 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-382196/3-A
Matrix: Water
Analysis Batch: 382995

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382196

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzidine	10.0	5.031	J,DX	ug/L		50	5 - 66	17	35

Lab Sample ID: LCSD 440-382196/3-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382196

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	10.0	7.096		ug/L		71	47 - 145	2	35
Acenaphthylene	10.0	7.207		ug/L		72	33 - 145	4	35
Anthracene	10.0	7.366		ug/L		74	27 - 133	0	35
Benzo[a]anthracene	10.0	7.773		ug/L		78	33 - 143	1	35
Benzo[b]fluoranthene	10.0	8.331		ug/L		83	24 - 150	1	35
Benzo[k]fluoranthene	10.0	8.430		ug/L		84	11 - 150	3	35
Benzo[a]pyrene	10.0	7.815		ug/L		78	17 - 150	3	35
Bis(2-chloroethoxy)methane	10.0	7.079		ug/L		71	33 - 150	5	35
Bis(2-chloroethyl)ether	10.0	6.954		ug/L		70	12 - 150	8	35
Bis(2-ethylhexyl) phthalate	10.0	7.780		ug/L		78	10 - 150	1	35
4-Bromophenyl phenyl ether	10.0	7.282		ug/L		73	53 - 127	3	35
Butyl benzyl phthalate	10.0	8.061		ug/L		81	10 - 150	2	35
4-Chloro-3-methylphenol	10.0	7.665		ug/L		77	22 - 147	9	35
2-Chloronaphthalene	10.0	6.963		ug/L		70	60 - 118	6	35
2-Chlorophenol	10.0	6.737		ug/L		67	23 - 134	8	35
4-Chlorophenyl phenyl ether	10.0	7.345		ug/L		73	25 - 150	6	35
Chrysene	10.0	7.585		ug/L		76	17 - 150	1	35
Dibenz(a,h)anthracene	10.0	7.921		ug/L		79	10 - 150	4	35
Di-n-butyl phthalate	10.0	7.700		ug/L		77	10 - 118	2	35
1,2-Dichlorobenzene	10.0	5.941		ug/L		59	32 - 129	7	35
1,3-Dichlorobenzene	10.0	5.656		ug/L		57	10 - 150	6	35
1,4-Dichlorobenzene	10.0	5.820		ug/L		58	20 - 124	8	35
3,3'-Dichlorobenzidine	10.0	7.473		ug/L		75	10 - 150	1	35
2,4-Dichlorophenol	10.0	7.111		ug/L		71	39 - 135	8	35
Diethyl phthalate	10.0	7.969		ug/L		80	10 - 114	2	35
2,4-Dimethylphenol	10.0	6.544		ug/L		65	32 - 119	1	35
Dimethyl phthalate	10.0	7.747		ug/L		77	10 - 112	1	35
4,6-Dinitro-2-methylphenol	20.0	13.38		ug/L		67	10 - 150	4	35
2,4-Dinitrophenol	20.0	12.65		ug/L		63	50 - 150	1	35
2,4-Dinitrotoluene	10.0	7.712		ug/L		77	39 - 139	2	35
2,6-Dinitrotoluene	10.0	7.676		ug/L		77	50 - 150	7	35
Di-n-octyl phthalate	10.0	7.532		ug/L		75	10 - 146	1	35
1,2-Diphenylhydrazine(as Azobenzene)	10.1	7.714		ug/L		76	47 - 116	2	35
Fluoranthene	10.0	7.607		ug/L		76	26 - 137	1	35
Fluorene	10.0	7.609		ug/L		76	59 - 121	5	35
Hexachlorobenzene	10.0	7.175		ug/L		72	10 - 150	6	35
Hexachlorobutadiene	10.0	5.083		ug/L		51	24 - 116	5	35
Hexachloroethane	10.0	5.524		ug/L		55	40 - 113	13	35
Hexachlorocyclopentadiene	10.0	2.884	J,DX	ug/L		29	10 - 67	8	35
Indeno[1,2,3-cd]pyrene	10.0	7.209		ug/L		72	10 - 150	6	35

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-382196/3-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 382196

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Isophorone	10.0	7.273		ug/L		73	21 - 150	6	35
Naphthalene	10.0	6.701		ug/L		67	21 - 133	9	35
Nitrobenzene	10.0	6.886		ug/L		69	35 - 150	5	35
2-Nitrophenol	10.0	6.944		ug/L		69	29 - 150	8	35
4-Nitrophenol	20.0	15.08		ug/L		75	10 - 132	2	35
N-Nitrosodimethylamine	10.0	6.535		ug/L		65	26 - 117	2	35
N-Nitrosodiphenylamine	10.0	7.078		ug/L		71	54 - 110	2	35
N-Nitrosodi-n-propylamine	10.0	7.227		ug/L		72	10 - 150	9	35
Pentachlorophenol	20.0	13.91		ug/L		70	14 - 150	0	35
Phenanthrene	10.0	7.329		ug/L		73	54 - 120	0	35
Phenol	10.0	7.008		ug/L		70	10 - 112	7	35
Pyrene	10.0	7.612		ug/L		76	52 - 115	0	35
1,2,4-Trichlorobenzene	10.0	6.074		ug/L		61	44 - 142	6	35
2,4,6-Trichlorophenol	10.0	7.269		ug/L		73	37 - 144	7	35
Benzo[g,h,i]perylene	10.0	7.519		ug/L		75	10 - 150	1	35
bis (2-chloroisopropyl) ether	10.0	6.764		ug/L		68	47 - 103	8	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	61		30 - 120
2,4,6-Tribromophenol	70		40 - 120
Nitrobenzene-d5	70		45 - 120
Terphenyl-d14	78		37 - 144
Phenol-d6	71		35 - 120

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-383089/1-A
Matrix: Water
Analysis Batch: 383111

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383089

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/19/17 07:40	01/19/17 21:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	37		29 - 115	01/19/17 07:40	01/19/17 21:17	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: LCS 440-383089/4-A
Matrix: Water
Analysis Batch: 383111

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383089

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aroclor 1016	4.00	3.51		ug/L		88	50 - 115
Aroclor 1260	4.00	3.41		ug/L		85	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	61		29 - 115

Lab Sample ID: LCSD 440-383089/5-A
Matrix: Water
Analysis Batch: 383111

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383089

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Aroclor 1016	4.00	3.84		ug/L		96	50 - 115	9	30
Aroclor 1260	4.00	3.75		ug/L		94	10 - 127	10	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	68		29 - 115

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-381160/1-A
Matrix: Water
Analysis Batch: 381816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381160

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		01/11/17 06:37	01/13/17 18:50	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/11/17 06:37	01/13/17 18:50	1
beta-BHC	ND		0.010	0.0040	ug/L		01/11/17 06:37	01/13/17 18:50	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/11/17 06:37	01/13/17 18:50	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/11/17 06:37	01/13/17 18:50	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/11/17 06:37	01/13/17 18:50	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/11/17 06:37	01/13/17 18:50	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/11/17 06:37	01/13/17 18:50	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/11/17 06:37	01/13/17 18:50	1
Endrin	ND		0.0050	0.0020	ug/L		01/11/17 06:37	01/13/17 18:50	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/11/17 06:37	01/13/17 18:50	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/11/17 06:37	01/13/17 18:50	1
Heptachlor	ND		0.010	0.0030	ug/L		01/11/17 06:37	01/13/17 18:50	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/11/17 06:37	01/13/17 18:50	1
Toxaphene	ND		0.50	0.25	ug/L		01/11/17 06:37	01/13/17 18:50	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/11/17 06:37	01/13/17 18:50	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/11/17 06:37	01/13/17 18:50	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/11/17 06:37	01/13/17 18:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	37		10 - 150	01/11/17 06:37	01/13/17 18:50	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-381160/2-A
Matrix: Water
Analysis Batch: 381816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381160

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.250	0.187		ug/L		75	42 - 122
alpha-BHC	0.250	0.194		ug/L		78	37 - 134
beta-BHC	0.250	0.187		ug/L		75	17 - 147
delta-BHC	0.250	0.200		ug/L		80	19 - 140
Dieldrin	0.250	0.203		ug/L		81	36 - 146
Endosulfan I	0.250	0.199		ug/L		80	45 - 150
Endosulfan II	0.250	0.203		ug/L		81	10 - 150
Endosulfan sulfate	0.250	0.198		ug/L		79	26 - 144
Endrin	0.250	0.220		ug/L		88	30 - 147
Endrin aldehyde	0.250	0.196		ug/L		78	47 - 115
gamma-BHC (Lindane)	0.250	0.200		ug/L		80	32 - 127
Heptachlor	0.250	0.213		ug/L		85	34 - 115
Heptachlor epoxide	0.250	0.203		ug/L		81	37 - 142
4,4'-DDD	0.250	0.209		ug/L		84	31 - 141
4,4'-DDE	0.250	0.199		ug/L		79	30 - 145
4,4'-DDT	0.250	0.245		ug/L		98	25 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	71		10 - 150

Lab Sample ID: LCSD 440-381160/3-A
Matrix: Water
Analysis Batch: 381816

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 381160

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aldrin	0.250	0.194		ug/L		78	42 - 122	4	35
alpha-BHC	0.250	0.199		ug/L		80	37 - 134	3	35
beta-BHC	0.250	0.187		ug/L		75	17 - 147	0	35
delta-BHC	0.250	0.204		ug/L		81	19 - 140	2	35
Dieldrin	0.250	0.200		ug/L		80	36 - 146	2	35
Endosulfan I	0.250	0.199		ug/L		80	45 - 150	0	35
Endosulfan II	0.250	0.202		ug/L		81	10 - 150	1	35
Endosulfan sulfate	0.250	0.191		ug/L		77	26 - 144	3	35
Endrin	0.250	0.218		ug/L		87	30 - 147	1	35
Endrin aldehyde	0.250	0.197		ug/L		79	47 - 115	1	35
gamma-BHC (Lindane)	0.250	0.205		ug/L		82	32 - 127	2	35
Heptachlor	0.250	0.212		ug/L		85	34 - 115	0	35
Heptachlor epoxide	0.250	0.203		ug/L		81	37 - 142	0	35
4,4'-DDD	0.250	0.204		ug/L		81	31 - 141	3	35
4,4'-DDE	0.250	0.192		ug/L		77	30 - 145	3	35
4,4'-DDT	0.250	0.235		ug/L		94	25 - 150	4	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	71		10 - 150

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-380922/3
Matrix: Water
Analysis Batch: 380922

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		1.0	0.25	ug/L			01/10/17 06:31	1

Lab Sample ID: LCS 440-380922/2
Matrix: Water
Analysis Batch: 380922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	52.4		ug/L		105	90 - 110

Lab Sample ID: MRL 440-380922/4
Matrix: Water
Analysis Batch: 380922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.08		ug/L		108	50 - 150

Lab Sample ID: 440-172760-1 MS
Matrix: Water
Analysis Batch: 380922

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	ND		50.0	49.2		ug/L		98	90 - 110

Lab Sample ID: 440-172760-1 MSD
Matrix: Water
Analysis Batch: 380922

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Chromium, hexavalent	ND		50.0	48.1		ug/L		96	90 - 110	2	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-381020/4
Matrix: Water
Analysis Batch: 381020

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/10/17 13:49	1
Fluoride	ND		0.50	0.25	mg/L			01/10/17 13:49	1
Sulfate	ND		0.50	0.25	mg/L			01/10/17 13:49	1

Lab Sample ID: LCS 440-381020/2
Matrix: Water
Analysis Batch: 381020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.88		mg/L		98	90 - 110
Fluoride	5.00	4.73		mg/L		95	90 - 110
Sulfate	5.00	5.16		mg/L		103	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-172760-1 MS

Matrix: Water

Analysis Batch: 381020

Client Sample ID: Outfall009_20170110_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.3		5.00	9.41		mg/L		102	80 - 120
Fluoride	ND		5.00	4.63		mg/L		93	80 - 120
Sulfate	4.9		5.00	10.0		mg/L		104	80 - 120

Lab Sample ID: 440-172760-1 MSD

Matrix: Water

Analysis Batch: 381020

Client Sample ID: Outfall009_20170110_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.3		5.00	9.38		mg/L		101	80 - 120	0	20
Fluoride	ND		5.00	4.63		mg/L		93	80 - 120	0	20
Sulfate	4.9		5.00	9.92		mg/L		101	80 - 120	1	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-381195/3

Matrix: Water

Analysis Batch: 381195

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/11/17 09:50	1

Lab Sample ID: LCS 440-381195/2

Matrix: Water

Analysis Batch: 381195

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.1		ug/L		100	85 - 115

Lab Sample ID: MRL 440-381195/5

Matrix: Water

Analysis Batch: 381195

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.02		ug/L		101	75 - 125

Lab Sample ID: 440-172740-B-1 MS

Matrix: Water

Analysis Batch: 381195

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	30.1		ug/L		120	80 - 120

Lab Sample ID: 440-172740-B-1 MSD

Matrix: Water

Analysis Batch: 381195

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	30.5	LM	ug/L		122	80 - 120	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-146219/1-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 146219

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,4,7,8-PeCDF	64		21 - 178	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,6,7,8-HxCDD	65		28 - 130	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	01/13/17 08:17	01/14/17 00:10	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	01/13/17 08:17	01/14/17 00:10	1
13C-OCDD	54		17 - 157	01/13/17 08:17	01/14/17 00:10	1
Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/13/17 08:17	01/14/17 00:10	1

Lab Sample ID: LCS 320-146219/2-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 146219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDF	0.000200	0.000199	MB	ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000990	MB	ug/L		99	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000952	MB	ug/L		95	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000992	MB	ug/L		99	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000951	MB	ug/L		95	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000977	MB	ug/L		98	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000837	MB	ug/L		84	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000927	MB	ug/L		93	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000974	MB	ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000958	MB	ug/L		96	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000974	MB	ug/L		97	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000967	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000961	MB	ug/L		96	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000922	MB	ug/L		92	78 - 138
OCDD	0.00200	0.00184	MB	ug/L		92	78 - 144
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170
Isotope Dilution	LCS LCS		Limits				
	%Recovery	Qualifier					
13C-2,3,7,8-TCDD	57		20 - 175				
13C-2,3,7,8-TCDF	59		22 - 152				
13C-1,2,3,7,8-PeCDD	66		21 - 227				
13C-1,2,3,7,8-PeCDF	64		21 - 192				
13C-2,3,4,7,8-PeCDF	71		13 - 328				
13C-1,2,3,4,7,8-HxCDD	65		21 - 193				
13C-1,2,3,6,7,8-HxCDD	66		25 - 163				
13C-1,2,3,4,7,8-HxCDF	69		19 - 202				
13C-1,2,3,6,7,8-HxCDF	66		21 - 159				

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-146219/2-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 146219

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	55		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	61		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	57		20 - 186
13C-OCDD	52		13 - 199

<i>Surrogate</i>	<i>%Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
37Cl4-2,3,7,8-TCDD	99		31 - 191

Lab Sample ID: LCSD 320-146219/3-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 146219

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
2,3,7,8-TCDD	0.000200	0.000201		ug/L		100	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000204	MB	ug/L		102	75 - 158	2	50
1,2,3,7,8-PeCDD	0.00100	0.00104	MB	ug/L		104	70 - 142	5	50
1,2,3,7,8-PeCDF	0.00100	0.00103	MB	ug/L		103	80 - 134	8	50
2,3,4,7,8-PeCDF	0.00100	0.000945	MB	ug/L		94	68 - 160	5	50
1,2,3,4,7,8-HxCDD	0.00100	0.000956	MB	ug/L		96	70 - 164	1	50
1,2,3,6,7,8-HxCDD	0.00100	0.000989	MB	ug/L		99	76 - 134	1	50
1,2,3,7,8,9-HxCDD	0.00100	0.000836	MB	ug/L		84	64 - 162	0	50
1,2,3,4,7,8-HxCDF	0.00100	0.000955	MB	ug/L		95	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	3	50
1,2,3,7,8,9-HxCDF	0.00100	0.000991	MB	ug/L		99	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	70 - 156	5	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000982	MB	ug/L		98	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000958	MB	ug/L		96	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000945	MB	ug/L		95	78 - 138	2	50
OCDD	0.00200	0.00190	MB	ug/L		95	78 - 144	3	50
OCDF	0.00200	0.00189	MB	ug/L		95	63 - 170	3	50

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>LCSD Qualifier</i>	<i>Limits</i>
13C-2,3,7,8-TCDD	57		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	76		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	74		19 - 202
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	63		17 - 205
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	69		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	73		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	69		20 - 186

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-146219/3-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 146219

	LCSD %Recovery	LCSD Qualifier	Limits
Isotope Dilution			
13C-OCDD	62		13 - 199
Surrogate			
37Cl4-2,3,7,8-TCDD	88		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-146219/1-A
Matrix: Water
Analysis Batch: 146574

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 146219

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000014	ug/L	-	01/13/17 08:17	01/16/17 14:45	1
Isotope Dilution									
13C-2,3,7,8-TCDF - RA	57		24 - 169				01/13/17 08:17	01/16/17 14:45	1
Surrogate									
37Cl4-2,3,7,8-TCDD - RA	85		35 - 197				01/13/17 08:17	01/16/17 14:45	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-383495/1-A
Matrix: Water
Analysis Batch: 384070

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 383495

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		50	25	ug/L	-	01/20/17 13:17	01/24/17 09:51	1
Arsenic	ND		10	5.0	ug/L	-	01/20/17 13:17	01/24/17 09:51	1
Boron	ND		0.050	0.010	mg/L	-	01/20/17 13:17	01/24/17 09:51	1
Beryllium	ND		2.0	1.0	ug/L	-	01/20/17 13:17	01/24/17 09:51	1
Chromium	ND		5.0	2.5	ug/L	-	01/20/17 13:17	01/24/17 09:51	1
Iron	ND		0.040	0.010	mg/L	-	01/20/17 13:17	01/24/17 09:51	1
Nickel	ND		10	5.0	ug/L	-	01/20/17 13:17	01/24/17 09:51	1
Vanadium	ND		10	5.0	ug/L	-	01/20/17 13:17	01/24/17 09:51	1
Zinc	ND		20	10	ug/L	-	01/20/17 13:17	01/24/17 09:51	1

Lab Sample ID: LCS 440-383495/2-A
Matrix: Water
Analysis Batch: 384070

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 383495

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits %Rec.
Aluminum	500	480		ug/L	-	96	85 - 115
Arsenic	500	510		ug/L	-	102	85 - 115
Boron	0.500	0.502		mg/L	-	100	85 - 115
Beryllium	500	501		ug/L	-	100	85 - 115
Calcium	2.50	2.63		mg/L	-	105	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-383495/2-A
Matrix: Water
Analysis Batch: 384070

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 383495

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	500	521		ug/L		104	85 - 115
Iron	0.500	0.520		mg/L		104	85 - 115
Magnesium	2.50	2.56		mg/L		102	85 - 115
Nickel	500	518		ug/L		104	85 - 115
Vanadium	500	498		ug/L		100	85 - 115
Zinc	500	512		ug/L		102	85 - 115
Silver	250	215		ug/L		86	85 - 115

Lab Sample ID: 440-172760-1 MS
Matrix: Water
Analysis Batch: 384070

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total Recoverable
Prep Batch: 383495

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	750		500	1990	LM	ug/L		247	70 - 130
Arsenic	ND		500	528		ug/L		106	70 - 130
Boron	0.050		0.500	0.573		mg/L		105	70 - 130
Beryllium	ND		500	521		ug/L		104	70 - 130
Calcium	7.7		2.50	10.7		mg/L		118	70 - 130
Chromium	ND		500	535		ug/L		107	70 - 130
Iron	0.86		0.500	1.63	LM	mg/L		153	70 - 130
Magnesium	2.3	MB	2.50	5.01		mg/L		109	70 - 130
Nickel	ND		500	531		ug/L		106	70 - 130
Vanadium	ND		500	516		ug/L		103	70 - 130
Zinc	17	J,DX	500	535		ug/L		104	70 - 130
Silver	ND		250	247		ug/L		99	70 - 130

Lab Sample ID: 440-172760-1 MSD
Matrix: Water
Analysis Batch: 384070

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total Recoverable
Prep Batch: 383495

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	750		500	2130	LM	ug/L		275	70 - 130	7	20
Arsenic	ND		500	545		ug/L		109	70 - 130	3	20
Boron	0.050		0.500	0.590		mg/L		108	70 - 130	3	20
Beryllium	ND		500	537		ug/L		107	70 - 130	3	20
Calcium	7.7		2.50	11.0	LM	mg/L		132	70 - 130	3	20
Chromium	ND		500	545		ug/L		109	70 - 130	2	20
Iron	0.86		0.500	1.68	LM	mg/L		163	70 - 130	3	20
Magnesium	2.3	MB	2.50	5.26		mg/L		119	70 - 130	5	20
Nickel	ND		500	541		ug/L		108	70 - 130	2	20
Vanadium	ND		500	535		ug/L		107	70 - 130	4	20
Zinc	17	J,DX	500	547		ug/L		106	70 - 130	2	20
Silver	ND		250	256		ug/L		103	70 - 130	4	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: MB 440-383199/1-H
Matrix: Water
Analysis Batch: 384077

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 383681

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		50	25	ug/L		01/22/17 11:04	01/24/17 11:46	1
Arsenic	ND		10	5.0	ug/L		01/22/17 11:04	01/24/17 11:46	1
Boron	ND		0.050	0.010	mg/L		01/22/17 11:04	01/24/17 11:46	1
Beryllium	ND		2.0	1.0	ug/L		01/22/17 11:04	01/24/17 11:46	1
Chromium	ND		5.0	2.5	ug/L		01/22/17 11:04	01/24/17 11:46	1
Nickel	ND		10	5.0	ug/L		01/22/17 11:04	01/24/17 11:46	1
Vanadium	ND		10	5.0	ug/L		01/22/17 11:04	01/24/17 11:46	1
Zinc	ND		20	10	ug/L		01/22/17 11:04	01/24/17 11:46	1

Lab Sample ID: MB 440-383199/1-H
Matrix: Water
Analysis Batch: 384391

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 383681

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.040	0.010	mg/L		01/22/17 11:04	01/25/17 14:30	1

Lab Sample ID: LCS 440-383199/2-H
Matrix: Water
Analysis Batch: 384077

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 383681

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	500	528		ug/L		106	85 - 115
Arsenic	500	549		ug/L		110	85 - 115
Boron	0.500	0.528		mg/L		106	85 - 115
Beryllium	500	519		ug/L		104	85 - 115
Chromium	500	539		ug/L		108	85 - 115
Magnesium	2.50	2.74		mg/L		110	85 - 115
Nickel	500	537		ug/L		107	85 - 115
Vanadium	500	527		ug/L		105	85 - 115
Zinc	500	535		ug/L		107	85 - 115
Silver	250	229		ug/L		92	85 - 115

Lab Sample ID: LCS 440-383199/2-H
Matrix: Water
Analysis Batch: 384391

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 383681

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	2.50	2.66		mg/L		106	85 - 115
Iron	0.500	0.519		mg/L		104	85 - 115

Lab Sample ID: LCSD 440-383199/21-B
Matrix: Water
Analysis Batch: 384077

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 383681

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Aluminum	500	507		ug/L		101	85 - 115	4	20
Arsenic	500	523		ug/L		105	85 - 115	5	20
Boron	0.500	0.510		mg/L		102	85 - 115	3	20
Beryllium	500	506		ug/L		101	85 - 115	3	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCSD 440-383199/21-B
Matrix: Water
Analysis Batch: 384077

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 383681

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	500	524		ug/L		105	85 - 115	3	20
Magnesium	2.50	2.65		mg/L		106	85 - 115	3	20
Nickel	500	522		ug/L		104	85 - 115	3	20
Vanadium	500	508		ug/L		102	85 - 115	4	20
Zinc	500	516		ug/L		103	85 - 115	4	20
Silver	250	236		ug/L		95	85 - 115	3	20

Lab Sample ID: LCSD 440-383199/21-B
Matrix: Water
Analysis Batch: 384391

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 383681

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	2.50	2.52		mg/L		101	85 - 115	5	20
Iron	0.500	0.491		mg/L		98	85 - 115	6	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-383491/1-A
Matrix: Water
Analysis Batch: 383908

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 383491

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/20/17 13:07	01/23/17 14:01	1
Copper	ND		2.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:01	1
Lead	ND		1.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:01	1
Antimony	ND		2.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:01	1
Selenium	ND		2.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:01	1
Thallium	ND		1.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:01	1
Silver	ND		1.0	0.50	ug/L		01/20/17 13:07	01/23/17 14:01	1

Lab Sample ID: LCS 440-383491/2-A
Matrix: Water
Analysis Batch: 383908

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 383491

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	78.3		ug/L		98	85 - 115
Copper	80.0	76.2		ug/L		95	85 - 115
Lead	80.0	78.2		ug/L		98	85 - 115
Antimony	80.0	80.2		ug/L		100	85 - 115
Selenium	80.0	79.2		ug/L		99	85 - 115
Thallium	80.0	81.4		ug/L		102	85 - 115
Silver	80.0	76.8		ug/L		96	85 - 115

Lab Sample ID: 440-172760-1 MS
Matrix: Water
Analysis Batch: 383908

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total Recoverable
Prep Batch: 383491

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	78.4		ug/L		98	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-172760-1 MS
Matrix: Water
Analysis Batch: 383908

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total Recoverable
Prep Batch: 383491

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	4.9		80.0	80.6		ug/L		95	70 - 130
Lead	2.4		80.0	82.8		ug/L		100	70 - 130
Antimony	0.77	J,DX	80.0	80.1		ug/L		99	70 - 130
Selenium	ND		80.0	79.0		ug/L		99	70 - 130
Thallium	ND		80.0	82.7		ug/L		103	70 - 130
Silver	ND		80.0	78.0		ug/L		97	70 - 130

Lab Sample ID: 440-172760-1 MSD
Matrix: Water
Analysis Batch: 383908

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total Recoverable
Prep Batch: 383491

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	79.7		ug/L		100	70 - 130	2	20
Copper	4.9		80.0	85.7		ug/L		101	70 - 130	6	20
Lead	2.4		80.0	83.1		ug/L		101	70 - 130	0	20
Antimony	0.77	J,DX	80.0	81.2		ug/L		101	70 - 130	1	20
Selenium	ND		80.0	82.9		ug/L		104	70 - 130	5	20
Thallium	ND		80.0	82.0		ug/L		102	70 - 130	1	20
Silver	ND		80.0	78.6		ug/L		98	70 - 130	1	20

Lab Sample ID: MB 440-383199/1-B
Matrix: Water
Analysis Batch: 383278

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 383252

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/19/17 15:47	01/19/17 16:48	1
Copper	ND		2.0	0.50	ug/L		01/19/17 15:47	01/19/17 16:48	1
Lead	ND		1.0	0.50	ug/L		01/19/17 15:47	01/19/17 16:48	1
Antimony	ND		2.0	0.50	ug/L		01/19/17 15:47	01/19/17 16:48	1
Selenium	ND		2.0	0.50	ug/L		01/19/17 15:47	01/19/17 16:48	1
Thallium	ND		1.0	0.50	ug/L		01/19/17 15:47	01/19/17 16:48	1
Silver	ND		1.0	0.50	ug/L		01/19/17 15:47	01/19/17 16:48	1

Lab Sample ID: LCS 440-383199/2-B
Matrix: Water
Analysis Batch: 383278

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 383252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	76.0		ug/L		95	85 - 115
Copper	80.0	75.4		ug/L		94	85 - 115
Lead	80.0	75.1		ug/L		94	85 - 115
Antimony	80.0	78.0		ug/L		97	85 - 115
Selenium	80.0	73.0		ug/L		91	85 - 115
Thallium	80.0	80.7		ug/L		101	85 - 115
Silver	80.0	76.2		ug/L		95	85 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-172760-G-1-E MS
Matrix: Water
Analysis Batch: 383278

Client Sample ID: 440-172760-G-1-E MS
Prep Type: Dissolved
Prep Batch: 383252

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Cadmium	ND	QP	80.0	75.5		ug/L		94	70 - 130
Copper	3.9	QP	80.0	76.5		ug/L		91	70 - 130
Lead	0.63	J,DX QP	80.0	75.1		ug/L		93	70 - 130
Antimony	0.68	J,DX QP	80.0	78.3		ug/L		97	70 - 130
Selenium	ND	QP	80.0	72.1		ug/L		90	70 - 130
Thallium	ND	QP	80.0	79.9		ug/L		100	70 - 130
Silver	ND	QP	80.0	75.5		ug/L		94	70 - 130

Lab Sample ID: 440-172760-G-1-F MSD
Matrix: Water
Analysis Batch: 383278

Client Sample ID: 440-172760-G-1-F MSD
Prep Type: Dissolved
Prep Batch: 383252

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	75.8		ug/L		95	70 - 130	0	20
Copper	3.9	QP	80.0	78.6		ug/L		93	70 - 130	3	20
Lead	0.63	J,DX QP	80.0	75.7		ug/L		94	70 - 130	1	20
Antimony	0.68	J,DX QP	80.0	78.5		ug/L		97	70 - 130	0	20
Selenium	ND	QP	80.0	71.9		ug/L		90	70 - 130	0	20
Thallium	ND	QP	80.0	80.5		ug/L		101	70 - 130	1	20
Silver	ND	QP	80.0	75.5		ug/L		94	70 - 130	0	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-381579/1-A
Matrix: Water
Analysis Batch: 381804

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381579

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND	IB	0.20	0.10	ug/L		01/12/17 15:50	01/13/17 04:46	1

Lab Sample ID: LCS 440-381579/2-A
Matrix: Water
Analysis Batch: 381804

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381579

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	9.15	IB	ug/L		114	85 - 115

Lab Sample ID: 440-172826-F-5-B MS
Matrix: Water
Analysis Batch: 381804

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 381579

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Mercury	ND	IB	8.00	8.96	IB	ug/L		112	70 - 130

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-172826-F-5-C MSD
Matrix: Water
Analysis Batch: 381804

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 381579

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	IB	8.00	8.94	IB	ug/L		112	70 - 130	0	20

Lab Sample ID: MB 440-383199/1-D
Matrix: Water
Analysis Batch: 383867

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 383325

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/19/17 22:39	01/21/17 01:33	1

Lab Sample ID: LCS 440-383199/2-D
Matrix: Water
Analysis Batch: 383867

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 383325

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.39		ug/L		105	85 - 115

Lab Sample ID: 440-172760-2 MS
Matrix: Water
Analysis Batch: 383867

Client Sample ID: Outfall009_20170110_Comp_F
Prep Type: Dissolved
Prep Batch: 383325

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.10	J,DX QP	8.00	8.21		ug/L		101	70 - 130

Lab Sample ID: 440-172760-2 MSD
Matrix: Water
Analysis Batch: 383867

Client Sample ID: Outfall009_20170110_Comp_F
Prep Type: Dissolved
Prep Batch: 383325

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.10	J,DX QP	8.00	8.32		ug/L		103	70 - 130	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-381397/1
Matrix: Water
Analysis Batch: 381397

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/12/17 08:00	1

Lab Sample ID: LCS 440-381397/2
Matrix: Water
Analysis Batch: 381397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	968		mg/L		97	90 - 110

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 440-172796-D-1 DU
Matrix: Water
Analysis Batch: 381397

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	620		612		mg/L		0.8	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-382351/1
Matrix: Water
Analysis Batch: 382351

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/16/17 17:06	1

Lab Sample ID: LCS 440-382351/2
Matrix: Water
Analysis Batch: 382351

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1010		mg/L		101	85 - 115

Lab Sample ID: 440-173107-B-1 DU
Matrix: Water
Analysis Batch: 382351

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	84		81.3		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-381370/1-A
Matrix: Water
Analysis Batch: 382133

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 381370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/12/17 16:33	01/15/17 20:37	1

Lab Sample ID: LCS 440-381370/2-A
Matrix: Water
Analysis Batch: 382133

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 381370

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	101		ug/L		101	90 - 110

Lab Sample ID: 440-172915-A-1-D MS
Matrix: Water
Analysis Batch: 382133

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 381370

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	104		ug/L		104	70 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-172915-A-1-E MSD
 Matrix: Water
 Analysis Batch: 382133

Client Sample ID: Matrix Spike Duplicate
 Prep Type: Total/NA
 Prep Batch: 381370

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	1	15

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

GC/MS Semi VOA

Prep Batch: 380936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	525.2	
MB 440-380936/1-A	Method Blank	Total/NA	Water	525.2	
LCS 440-380936/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-380936/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	

Analysis Batch: 381159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	525.2	380936
MB 440-380936/1-A	Method Blank	Total/NA	Water	525.2	380936
LCS 440-380936/2-A	Lab Control Sample	Total/NA	Water	525.2	380936
LCSD 440-380936/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	380936

Prep Batch: 382196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	625	
MB 440-382196/1-A	Method Blank	Total/NA	Water	625	
LCS 440-382196/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-382196/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 382995

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	625	382196
MB 440-382196/1-A	Method Blank	Total/NA	Water	625	382196
LCS 440-382196/2-A	Lab Control Sample	Total/NA	Water	625	382196
LCSD 440-382196/3-A	Lab Control Sample Dup	Total/NA	Water	625	382196

Analysis Batch: 384955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	625	382196
MB 440-382196/1-A	Method Blank	Total/NA	Water	625	382196
LCS 440-382196/2-A	Lab Control Sample	Total/NA	Water	625	382196
LCSD 440-382196/3-A	Lab Control Sample Dup	Total/NA	Water	625	382196

GC Semi VOA

Prep Batch: 381160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	608	
MB 440-381160/1-A	Method Blank	Total/NA	Water	608	
LCS 440-381160/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-381160/3-A	Lab Control Sample Dup	Total/NA	Water	608	

Analysis Batch: 381816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	608 Pesticides	381160
MB 440-381160/1-A	Method Blank	Total/NA	Water	608 Pesticides	381160
LCS 440-381160/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	381160
LCSD 440-381160/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	381160

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

GC Semi VOA (Continued)

Prep Batch: 383089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	608	
MB 440-383089/1-A	Method Blank	Total/NA	Water	608	
LCS 440-383089/4-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-383089/5-A	Lab Control Sample Dup	Total/NA	Water	608	

Analysis Batch: 383111

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	608 PCB LL	383089
MB 440-383089/1-A	Method Blank	Total/NA	Water	608 PCB LL	383089
LCS 440-383089/4-A	Lab Control Sample	Total/NA	Water	608 PCB LL	383089
LCS 440-383089/5-A	Lab Control Sample Dup	Total/NA	Water	608 PCB LL	383089

HPLC/IC

Analysis Batch: 380922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	218.6	
MB 440-380922/3	Method Blank	Total/NA	Water	218.6	
LCS 440-380922/2	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-380922/4	Lab Control Sample	Total/NA	Water	218.6	
440-172760-1 MS	Outfall009_20170110_Comp	Total/NA	Water	218.6	
440-172760-1 MSD	Outfall009_20170110_Comp	Total/NA	Water	218.6	

Analysis Batch: 381020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	300.0	
MB 440-381020/4	Method Blank	Total/NA	Water	300.0	
LCS 440-381020/2	Lab Control Sample	Total/NA	Water	300.0	
440-172760-1 MS	Outfall009_20170110_Comp	Total/NA	Water	300.0	
440-172760-1 MSD	Outfall009_20170110_Comp	Total/NA	Water	300.0	

Analysis Batch: 381195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	314.0	
MB 440-381195/3	Method Blank	Total/NA	Water	314.0	
LCS 440-381195/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-381195/5	Lab Control Sample	Total/NA	Water	314.0	
440-172740-B-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-172740-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 383487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 146219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	1613B	
440-172760-1 - RA	Outfall009_20170110_Comp	Total/NA	Water	1613B	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Specialty Organics (Continued)

Prep Batch: 146219 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-146219/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-146219/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-146219/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-146219/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 146365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	1613B	146219
MB 320-146219/1-A	Method Blank	Total/NA	Water	1613B	146219
LCS 320-146219/2-A	Lab Control Sample	Total/NA	Water	1613B	146219
LCSD 320-146219/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	146219

Analysis Batch: 146574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1 - RA	Outfall009_20170110_Comp	Total/NA	Water	1613B	146219
MB 320-146219/1-A - RA	Method Blank	Total/NA	Water	1613B	146219

Metals

Prep Batch: 381579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	245.1	
MB 440-381579/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-381579/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-172826-F-5-B MS	Matrix Spike	Total/NA	Water	245.1	
440-172826-F-5-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 381804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	245.1	381579
MB 440-381579/1-A	Method Blank	Total/NA	Water	245.1	381579
LCS 440-381579/2-A	Lab Control Sample	Total/NA	Water	245.1	381579
440-172826-F-5-B MS	Matrix Spike	Total/NA	Water	245.1	381579
440-172826-F-5-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	381579

Filtration Batch: 383199

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Dissolved	Water	FILTRATION	
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	FILTRATION	
MB 440-383199/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-383199/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-383199/1-H	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-383199/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-383199/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-383199/2-H	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-383199/21-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
440-172760-2 MS	Outfall009_20170110_Comp_F	Dissolved	Water	FILTRATION	
440-172760-2 MSD	Outfall009_20170110_Comp_F	Dissolved	Water	FILTRATION	
440-172760-G-1-E MS	440-172760-G-1-E MS	Dissolved	Water	FILTRATION	
440-172760-G-1-F MSD	440-172760-G-1-F MSD	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Metals (Continued)

Prep Batch: 383252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	200.2	383199
MB 440-383199/1-B	Method Blank	Dissolved	Water	200.2	383199
LCS 440-383199/2-B	Lab Control Sample	Dissolved	Water	200.2	383199
440-172760-G-1-E MS	440-172760-G-1-E MS	Dissolved	Water	200.2	383199
440-172760-G-1-F MSD	440-172760-G-1-F MSD	Dissolved	Water	200.2	383199

Analysis Batch: 383278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	200.8	383252
MB 440-383199/1-B	Method Blank	Dissolved	Water	200.8	383252
LCS 440-383199/2-B	Lab Control Sample	Dissolved	Water	200.8	383252
440-172760-G-1-E MS	440-172760-G-1-E MS	Dissolved	Water	200.8	383252
440-172760-G-1-F MSD	440-172760-G-1-F MSD	Dissolved	Water	200.8	383252

Prep Batch: 383325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Dissolved	Water	245.1	383199
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	245.1	383199
MB 440-383199/1-D	Method Blank	Dissolved	Water	245.1	383199
LCS 440-383199/2-D	Lab Control Sample	Dissolved	Water	245.1	383199
440-172760-2 MS	Outfall009_20170110_Comp_F	Dissolved	Water	245.1	383199
440-172760-2 MSD	Outfall009_20170110_Comp_F	Dissolved	Water	245.1	383199

Prep Batch: 383491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total Recoverable	Water	200.2	
MB 440-383491/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-383491/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-172760-1 MS	Outfall009_20170110_Comp	Total Recoverable	Water	200.2	
440-172760-1 MSD	Outfall009_20170110_Comp	Total Recoverable	Water	200.2	

Prep Batch: 383495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total Recoverable	Water	200.2	
MB 440-383495/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-383495/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-172760-1 MS	Outfall009_20170110_Comp	Total Recoverable	Water	200.2	
440-172760-1 MSD	Outfall009_20170110_Comp	Total Recoverable	Water	200.2	

Prep Batch: 383681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	200.2	383199
MB 440-383199/1-H	Method Blank	Dissolved	Water	200.2	383199
LCS 440-383199/2-H	Lab Control Sample	Dissolved	Water	200.2	383199
LCSD 440-383199/21-B	Lab Control Sample Dup	Dissolved	Water	200.2	383199

Analysis Batch: 383867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Dissolved	Water	245.1	383325
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	245.1	383325
MB 440-383199/1-D	Method Blank	Dissolved	Water	245.1	383325

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Metals (Continued)

Analysis Batch: 383867 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-383199/2-D	Lab Control Sample	Dissolved	Water	245.1	383325
440-172760-2 MS	Outfall009_20170110_Comp_F	Dissolved	Water	245.1	383325
440-172760-2 MSD	Outfall009_20170110_Comp_F	Dissolved	Water	245.1	383325

Analysis Batch: 383908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total Recoverable	Water	200.8	383491
MB 440-383491/1-A	Method Blank	Total Recoverable	Water	200.8	383491
LCS 440-383491/2-A	Lab Control Sample	Total Recoverable	Water	200.8	383491
440-172760-1 MS	Outfall009_20170110_Comp	Total Recoverable	Water	200.8	383491
440-172760-1 MSD	Outfall009_20170110_Comp	Total Recoverable	Water	200.8	383491

Analysis Batch: 384070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total Recoverable	Water	200.7 Rev 4.4	383495
MB 440-383495/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	383495
LCS 440-383495/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	383495
440-172760-1 MS	Outfall009_20170110_Comp	Total Recoverable	Water	200.7 Rev 4.4	383495
440-172760-1 MSD	Outfall009_20170110_Comp	Total Recoverable	Water	200.7 Rev 4.4	383495

Analysis Batch: 384077

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	200.7 Rev 4.4	383681
MB 440-383199/1-H	Method Blank	Dissolved	Water	200.7 Rev 4.4	383681
LCS 440-383199/2-H	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	383681
LCSD 440-383199/21-B	Lab Control Sample Dup	Dissolved	Water	200.7 Rev 4.4	383681

Analysis Batch: 384391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	200.7 Rev 4.4	383681
MB 440-383199/1-H	Method Blank	Dissolved	Water	200.7 Rev 4.4	383681
LCS 440-383199/2-H	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	383681
LCSD 440-383199/21-B	Lab Control Sample Dup	Dissolved	Water	200.7 Rev 4.4	383681

Analysis Batch: 389185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total Recoverable	Water	SM 2340B	

Analysis Batch: 389186

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-2	Outfall009_20170110_Comp_F	Dissolved	Water	SM 2340B	

General Chemistry

Prep Batch: 381370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	Distill/CN	
MB 440-381370/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-381370/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-172915-A-1-D MS	Matrix Spike	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

General Chemistry (Continued)

Prep Batch: 381370 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172915-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 381397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	SM 2540C	
MB 440-381397/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-381397/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-172796-D-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 382133

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	SM 4500 CN E	381370
MB 440-381370/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	381370
LCS 440-381370/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	381370
440-172915-A-1-D MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	381370
440-172915-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	381370

Analysis Batch: 382351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	SM 2540D	
MB 440-382351/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-382351/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-173107-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

GC Semi VOA

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time

HPLC/IC

Qualifier	Qualifier Description
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
IB	CCV recovery above limit; analyte not detected
QP	Holding time Immediate. Analyzed as close to receipt as possible
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



LA Testing

520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
<http://www.LATesting.com> / pasadenalab@latesting.com

LA Testing Order ID: 321700677
Customer ID: TEST72
Customer PO:
Project ID:

Attn: Urvashi Patel
TestAmerica - Irvine, CA
17461 Derian Avenue
Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 260-3297
Collected: 01/10/2017
Received: 01/12/2017
Analyzed: 01/23/2017
Proj: Boeing NPDES SSFL Outfalls / 44009879

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm ²)	Area Analyzed (mm ²)	ASBESTOS				
					Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration MFL (million fibers per liter)	Confidence Limits
Outfall 20170110 Comp (← 321700677-0001	1/17/2017 12:20 PM	30	1288	0.2261	None Detected	ND	0.19	<0.19	0.00 - 0.70

Sample ozonated prior to analysis due to lab receipt time exceeding 48hr method hold time.

Analyst(s)
Sherrie Ahmad (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 01/23/2017 10:19:40

Sample collection and containers provided by the client, acceptable bottle blank level is defined as ≤0.01MFL>10µm. ND=None Detected. This report relates only to those items tested. This report may not be reproduced, except in full, without written permission by LA Testing. Samples received in good condition unless otherwise noted.
Samples analyzed by LA Testing South Pasadena, CA CA ELAP 2283



February 3, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall_20170110_Comp (440-172760-1)
DATE RECEIVED: 11 Jan - 17
ABC LAB NO.: TAM0117.077

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 17.98 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 20 Jan-17 08:38 (p 1 of 1)
 Test Code: TAM0117.077 | 17-6144-7686

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-8889-2221	Test Type: Cell Growth	Analyst:
Start Date: 11 Jan-17 12:45	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Jan-17 14:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 2h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 16-8109-5449	Code: TAM0117.077	Client: Test America Irvine
Sample Date: 10 Jan-17 09:26	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 11 Jan-17 10:00	Source: Bioassay Report	
Sample Age: 27h (4.8 °C)	Station: Outfall_20170110_Comp (440-172760-1)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
01-0682-4225	Cell Density	TST-Welch's t Test	0.1158	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
01-0682-4225	Cell Density	Control CV	0.01094	<<	0.2	Yes	Passes Criteria
01-0682-4225	Cell Density	Control Resp	1.55E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.548E+6	1.521E+6	1.575E+6	1.529E+6	1.564E+6	8.469E+3	1.694E+4	1.09%	0.00%
100		4	1.270E+6	1.039E+6	1.500E+6	1.124E+6	1.408E+6	7.237E+4	1.447E+5	11.40%	17.98%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.560E+6	1.538E+6	1.564E+6	1.529E+6
100		1.408E+6	1.124E+6	1.379E+6	1.167E+6

CETIS Analytical Report

Report Date: 20 Jan-17 08:38 (p 1 of 2)
 Test Code: TAM0117.077 | 17-6144-7686

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 01-0682-4225	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 20 Jan-17 8:38	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes	
Batch ID: 10-8889-2221	Test Type: Cell Growth	Analyst:	
Start Date: 11 Jan-17 12:45	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 15 Jan-17 14:30	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 4d 2h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 16-8109-5449	Code: TAM0117.077	Client: Test America Irvine	
Sample Date: 10 Jan-17 09:26	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls	
Receipt Date: 11 Jan-17 10:00	Source: Bioassay Report		
Sample Age: 27h (4.8 °C)	Station: Outfall_20170110_Comp (440-172760-1)		

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test								
Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	1.496	0.7649	3	CDF	0.1158	Non-Significant Effect

Test Acceptability Criteria					
Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.01094	<<	0.2	Yes	Passes Criteria
Control Resp	1.55E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.548E+11	1.548E+11	1	14.58	0.0088	Significant Effect
Error	6.371E+10	1.062E+10	6			
Total	2.186E+11		7			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Levene Equality of Variance Test	103.7	13.75	5.2E-05	Unequal Variances	
Variances	Mod Levene Equality of Variance Test	99.77	13.75	5.8E-05	Unequal Variances	
Variances	Varlance Ratio F Test	73.02	47.47	0.0053	Unequal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.2817	3.878	0.6679	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1824	0.3313	0.7498	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.9519	0.6451	0.7305	Normal Distribution	

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.548E+6	1.521E+6	1.575E+6	1.549E+6	1.529E+6	1.564E+6	8.470E+3	1.09%	0.00%
100		4	1.270E+6	1.039E+6	1.500E+6	1.273E+6	1.124E+6	1.408E+6	7.237E+4	11.40%	17.98%

Cell Density Detail					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.560E+6	1.538E+6	1.564E+6	1.529E+6
100		1.408E+6	1.124E+6	1.379E+6	1.167E+6

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 01-0682-4225

Endpoint: Cell Density

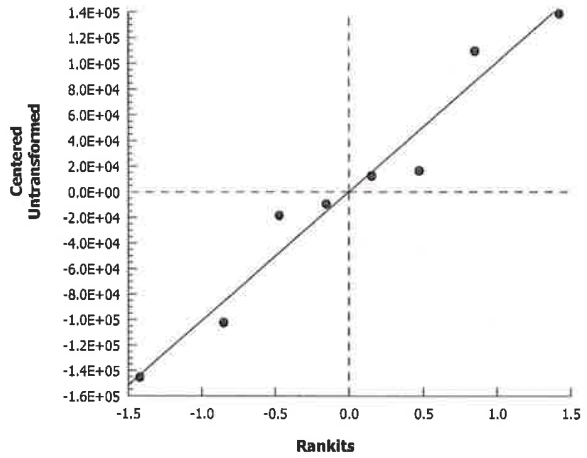
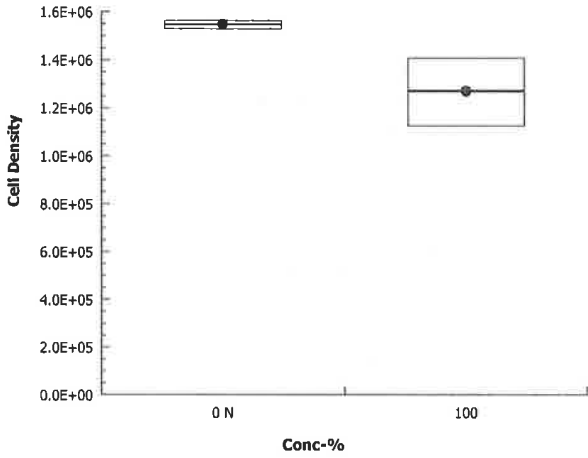
CETIS Version: CETISv1.9.2

Analyzed: 20 Jan-17 8:38

Analysis: Parametric Bioequivalence-Two Sample

Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 20 Jan-17 08:38 (p 1 of 2)
 Test Code: TAM0117.077 | 17-6144-7686

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 10-8889-2221	Test Type: Cell Growth	Analyst:
Start Date: 11 Jan-17 12:45	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 15 Jan-17 14:30	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 4d 2h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 16-8109-5449	Code: TAM0117.077	Client: Test America Irvine
Sample Date: 10 Jan-17 09:26	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 11 Jan-17 10:00	Source: Bioassay Report	
Sample Age: 27h (4.8 °C)	Station: Outfall_20170110_Comp (440-172760-1)	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	58			58	58	0	0	0.0%	0
Overall		2	63.5	-6.384	133.4	58	69	5.5	7.778	12.25%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	473.6	465.5	481.7	467	483	2.909	6.504	1.37%	0
100		5	188.6	183.8	193.4	184	193	1.72	3.847	2.04%	0
Overall		10	331.1	223.6	438.6	184	483	47.53	150.3	45.39%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
100		1	66			66	66	0	0	0.0%	0
Overall		2	82.5	-127.2	292.2	66	99	16.5	23.33	28.28%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.7	7.485	7.915	7.6	8	0.07746	0.1732	2.25%	0
100		5	7.84	7.772	7.908	7.8	7.9	0.02449	0.05477	0.7%	0
Overall		10	7.77	7.669	7.871	7.6	8	0.04485	0.1418	1.83%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	25.28	24.4	26.16	24.5	26	0.3153	0.705	2.79%	0
100		5	25.28	24.4	26.16	24.5	26	0.3153	0.705	2.79%	0
Overall		10	25.28	24.8	25.76	24.5	26	0.2102	0.6647	2.63%	0 (0%)

CETIS Measurement Report

Report Date: 20 Jan-17 08:38 (p 2 of 2)
 Test Code: TAM0117.077 | 17-6144-7686

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		58

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	467	468	474	476	483
100		184	186	188	193	192

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	99
100		66

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.6	7.6	7.7	8	7.6
100		7.8	7.8	7.8	7.9	7.9

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.7	24.5	25.2	26	26
100		24.7	24.5	25.2	26	26



CHAIN OF CUSTODY FORM

Client Name/Address: **Haley & Aldrich**
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108
 Test America Contact: Unashl Panel
 17461 Dodson Ave Suite #100
 Irvine CA 92614
 Tel 949-260-3269
 Call 949-333-9055

Project: **Boeing-SSFL NPDES**
 Permit 2017
 Annual Outfall 003-007, 009, 010J
 Outfall 009
 Comp

Project Manager: Nancy Gardiner
 619.285.7132, 858.337.4061 (cell)
 Field Manager: Mark Dominick
 818.350.7312, 818.589.0702 (cell)

Sampler: Daniel Ear

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMISD	Total Recoverable Metals: Cu, Pb, Hg, B, Fe, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, V, Al, Hardness as CaCO3		TCDD (and all congeners)	Cl-, F-, SO4, NO3+NO2-N, Perchlorate	TDS	TSS	Total Dissolved Metals: Cu, Pb, Hg, B, Fe, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, V, Al, Hardness as CaCO3	Gross Alpha(900.0), Gross Beta(900.0), Tritium (H-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, CS-137 (901.0 or 901.1)	Chronic Toxicity - Selenastrum	Cyanide	Priority Pollutants-Pesticides+PCBs	Total Recoverable Metals: Mercury (245.1)	Total Dissolved Metals: Mercury (245.1)	48 hours Holding Time NO3 & NO2							
									Yes	No																			
Outfall009_20170110_Comp		1/10/2017 10:44	WM	500 mL Poly	3	HNO3	85	Yes	X																				
				1 L Glass Amber	2	None	110	No																					
				500 mL Poly	6	None	135	Yes																					
				1 L Poly	1	None	195	No																					
				500 mL Poly	1	None	195	No																					
				1 L Poly	1	None	185	No																					
				500 mL Poly	3	None	225	Yes																					
				2.5 Gal Cube	3	HClOH	220	Yes																					
				1 L Glass Amber	3	None	230	Yes																					
				1 Gal Cube	6	None	235	No																					
				1 L Glass Amber	6	None	250	Yes																					
				Outfall009_20170110_Comp_F		1/10/2017 10:26	WM	borosilicate vials	3	HNO3	315	Yes																	
1 L Poly	3	None	195					Yes																					
borosilicate vials	3	None	320					Yes																					
Outfall009_20170110_Comp_Extra		1/10/2017 10:25	WM	1 L Glass Amber	2	None	110	No																					
				500 mL Poly	2	None	135	No																					
				1 L Glass Amber	2	None	230	No																					

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 009 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 009 for the same event.

Relinquished By: *[Signature]* Date/Time: 1/10/17 12:15 THA Env. Company: *[Signature]*

Relinquished By: *[Signature]* Date/Time: 1-10-17 12:15 Company: *[Signature]*

Relinquished By: *[Signature]* Date/Time: 1/10/17 15:55 Company: *[Signature]*

Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check) Intact: _____ On Ice: _____
 Data Requirements: (Check) No Level IV: _____ All Level IV: _____

- get to 9 mails for following
 - draw from procedure
 - draw and prep in get water
 - draw for hour 10:25

38/32
 3-2/20
 2-2/14
 1-3/0-7
 2-6/2-0

28/22
 2-2/14
 2-2/14
 1-1/1

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017


STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

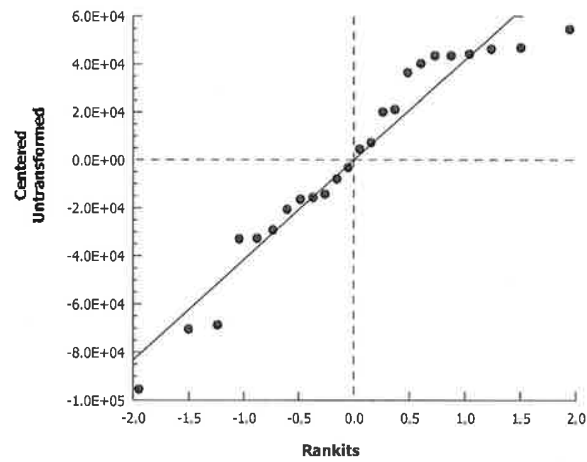
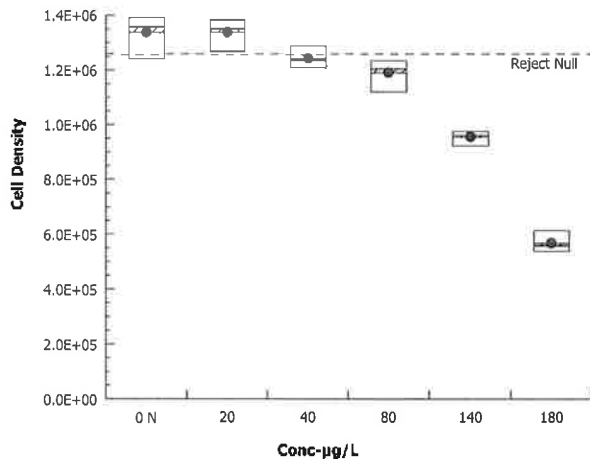
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 14-2916-7122	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	34.35	13.62	61.11
IC10	69.42	18.65	99.03
IC15	93.35	62.81	109.5
IC20	110.4	88.48	124.6
IC25	127.5	108.9	141.2
IC40	155.7	149.9	160.7
IC50	169.5	164.4	175.1

Cell Density Summary

Conc-µg/L	Code	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.0%
20		4	1.341E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.82%	6.92%
80		4	1.192E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Carrier Tracking No(s):	
Client Contact: Shipping/Receiving		E-Mail: urvashi.patel@testamericainc.com		State of Origin: California	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		COC No: 440-106365.1	
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605		Due Date Requested: 1/20/2017		Page Page 1 of 1	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		TAT Requested (days):		Job #: 440-172760-1	
Email:		PO #:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Site: Boeing NPDES SSFL outfalls		SSOW#:		Total Number of Containers	
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
Outfall_20170110_Comp (440-172760-1)		1/10/17		X	
Sample Time		Sample Time		Perform MS/MSD (Yes or No)	
09:26 Pacific		09:26 Pacific		X	
Sample Type (C=comp, G=grab)		Sample Type		1513B/1513B_Box_Sep_P_Standard List w/ Totals	
Preservation Code		Matrix		Special Instructions/Note:	
Water		Water		See OAS, Boeing_wlu to zero, Use Boeing glassware.	
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)					
Primary Deliverable Rank: 2					
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Special Instructions/QC Requirements:					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Empty Kit Relinquished by:					
Date/Time: 1/11/17 12:00		Date/Time: 1/11/17 17:00		Company: TAF	
Date/Time: 1/11/17 12:00		Date/Time: 1/12/17 10:30		Company: TAF	
Date/Time: 1/11/17 12:00		Date/Time: 1/12/17 10:30		Company: TAF	
Custody Seal No: Δ Yes Δ No					
Custody Seals Intact: Δ Yes Δ No					
Cooler Temperature(s) °C and Other Remarks: 1-2					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172760-1

Login Number: 172760

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172760-1

Login Number: 172760
List Number: 3
Creator: Edman, Connor M

List Source: TestAmerica Sacramento
List Creation: 01/12/17 04:57 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-172760-1	Outfall009_20170110_Comp		73		73		82		74
440-172760-1 - RA	Outfall009_20170110_Comp				76				
MB 320-146219/1-A	Method Blank		53		55		60		58
MB 320-146219/1-A - RA	Method Blank				57				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-172760-1	Outfall009_20170110_Comp		87		91		90		92
440-172760-1 - RA	Outfall009_20170110_Comp								
MB 320-146219/1-A	Method Blank		64		65		65		65
MB 320-146219/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-172760-1	Outfall009_20170110_Comp		88		82		88	90	
440-172760-1 - RA	Outfall009_20170110_Comp								
MB 320-146219/1-A	Method Blank		64		54		64	58	
MB 320-146219/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-172760-1	Outfall009_20170110_Comp		97		89		83
440-172760-1 - RA	Outfall009_20170110_Comp						
MB 320-146219/1-A	Method Blank		65		58		54
MB 320-146219/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-146219/2-A	Lab Control Sample	57	59	66	64	71	65	66	69
LCSD 320-146219/3-A	Lab Control Sample Dup	57	59	67	61	73	76	71	74

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-146219/2-A	Lab Control Sample	66	56	67	55	61	57	52
LCSD 320-146219/3-A	Lab Control Sample Dup	69	63	71	69	73	69	62

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-172760-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 6, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-172760-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170110 _Comp	440-172760-1	N/A	Water	1/10/2017 9:26:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-172760-2:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 18, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The laboratory calibration information included the standard certificates and applicable preparation/dilutions logs for NIST-traceability.

The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for these analytes including combined radium were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of total uranium and gross beta. Total uranium was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries and as applicable RPDs were within laboratory-established control limits.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on the sample in this SDG for cesium-137. The relative error ratio was within the laboratory control limit of ≤ 1 and did not differ at the 5% significance level.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample from this SDG due to limited sample volume. Accuracy, and as applicable precision, was evaluated based upon LCS/LCSD results.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.



III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401727602

Analysis Method E900

Sample Name Outfall009_20170110_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/10/2017 9:26:00 AM Validation Level: 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.07	0.831	1.24	1.24	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	2.16	0.689	0.829	0.829	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall009_20170110_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/10/2017 9:26:00 AM Validation Level: 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-4.50	9.43	17.6	17.6	pCi/L	U	U	
Potassium-40	13966-00-2	50.8	119	204	204	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170110_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/10/2017 9:26:00 AM Validation Level: 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0286	0.0788	0.149	0.149	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall009_20170110_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/10/2017 9:26:00 AM Validation Level: 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0392	0.170	0.301	0.301	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.115	0.285	0.493	0.493	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	207	193	312	312	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170110_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/10/2017 9:26:00 AM **Validation Level:** 8

Lab Sample Name: 440-172760-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.158	0.1247	0.111	0.111	pCi/L		U	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-172760-2

Client Project/Site: Boeing NPDES SSFL outfalls

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/16/2017 9:57:07 PM

Urvashi Patel, Manager of Project Management

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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/16/2017 9:57:07 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-172760-1	Outfall009_20170110_Comp	Water	01/10/17 09:26	01/10/17 15:55

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Job ID: 440-172760-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-172760-2

Comments

No additional comments.

Receipt

The samples were received on 1/10/2017 3:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 7 coolers at receipt time were 0.7° C, 1.6° C, 1.6° C, 2.0° C, 2.2° C, 2.6° C and 3.2° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-290284:

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size attributed to high residual mass: (440-172816-B-1-A) and (440-172816-B-1-D DU). Analytical results are reported with the detection limit achieved.

Method(s) ExtChrom: Uranium prep batch 160-288715: Due to insufficient volume, a laboratory control sample and laboratory control sample duplicate were used to demonstrate batch precision. Outfall009_20170110_Comp (440-172760-1)

Method(s) PrecSep_0: Radium-228 Prep Batch 160-287932:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: Outfall009_20170110_Comp (440-172760-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium-226 Prep Batch 160-287929:

Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: Outfall009_20170110_Comp (440-172760-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences. Outfall009_20170110_Comp (440-172760-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.07	U	0.822	0.831	3.00	1.24	pCi/L	01/31/17 10:20	02/06/17 18:46	1
Gross Beta	2.16		0.654	0.689	4.00	0.829	pCi/L	01/31/17 10:20	02/06/17 18:46	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-4.50	U	9.42	9.43	20.0	17.6	pCi/L	01/16/17 14:43	01/16/17 15:14	1
Potassium-40	50.8	U	119	119		204	pCi/L	01/16/17 14:43	01/16/17 15:14	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0286	U	0.0788	0.0788	1.00	0.149	pCi/L	01/17/17 06:56	02/08/17 09:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.8		40 - 110					01/17/17 06:56	02/08/17 09:27	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0392	U	0.170	0.170	1.00	0.301	pCi/L	01/17/17 07:58	02/03/17 12:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.8		40 - 110					01/17/17 07:58	02/03/17 12:46	1
Y Carrier	85.2		40 - 110					01/17/17 07:58	02/03/17 12:46	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.115	U	0.284	0.285	3.00	0.493	pCi/L	01/31/17 11:55	02/13/17 17:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.6		40 - 110					01/31/17 11:55	02/13/17 17:07	1
Y Carrier	96.1		40 - 110					01/31/17 11:55	02/13/17 17:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	207	U	192	193	500	312	pCi/L	02/07/17 09:35	02/08/17 04:31	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.158		0.1244	0.1247	1.00	0.111	pCi/L	01/23/17 10:49	01/27/17 13:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.7		30 - 110					01/23/17 10:49	01/27/17 13:17	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Client Sample ID: Outfall009_20170110_Comp

Lab Sample ID: 440-172760-1

Date Collected: 01/10/17 09:26

Matrix: Water

Date Received: 01/10/17 15:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	290284	01/31/17 10:20	GEM	TAL SL
Total/NA	Analysis	900.0		1			291016	02/06/17 18:46	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	287912	01/16/17 14:43	R1S	TAL SL
Total/NA	Analysis	901.1		1			287856	01/16/17 15:14	KLS	TAL SL
Total/NA	Prep	PrecSep-21			999.23 mL	1.0 g	287929	01/17/17 06:56	AS	TAL SL
Total/NA	Analysis	903.0		1			291521	02/08/17 09:27	ALD	TAL SL
Total/NA	Prep	PrecSep_0			999.23 mL	1.0 g	287932	01/17/17 07:58	AS	TAL SL
Total/NA	Analysis	904.0		1			290911	02/03/17 12:46	ALD	TAL SL
Total/NA	Prep	PrecSep-7			500.87 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:07	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.0 mL	1.0 g	291326	02/07/17 09:35	JDL	TAL SL
Total/NA	Analysis	906.0		1			291529	02/08/17 04:31	ALD	TAL SL
Total/NA	Prep	ExtChrom			499.38 mL	1.0 mL	288715	01/23/17 10:49	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			289615	01/27/17 13:17	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-290284/1-A
Matrix: Water
Analysis Batch: 291016

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290284

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.2478	U	0.652	0.652	3.00	1.16	pCi/L	01/31/17 10:20	02/06/17 18:44	1
Gross Beta	-0.3990	U	0.538	0.539	4.00	1.01	pCi/L	01/31/17 10:20	02/06/17 18:44	1

Lab Sample ID: LCS 160-290284/2-A
Matrix: Water
Analysis Batch: 291016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290284

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	42.19		6.24	3.00	2.05	pCi/L	85	73 - 133

Lab Sample ID: LCSB 160-290284/3-A
Matrix: Water
Analysis Batch: 291016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290284

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.2	91.18		9.65	4.00	1.04	pCi/L	100	75 - 125

Lab Sample ID: 440-172816-B-1-B MS
Matrix: Water
Analysis Batch: 291047

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290284

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	3.01	U G	52.5	32.74		6.83	3.00	4.10	pCi/L	62	60 - 140

Lab Sample ID: 440-172816-B-1-C MSBT
Matrix: Water
Analysis Batch: 291047

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290284

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	1.59	U	96.0	99.61		11.1	4.00	2.10	pCi/L	104	60 - 140

Lab Sample ID: 440-172816-B-1-D DU
Matrix: Water
Analysis Batch: 291047

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 290284

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	RER Limit
					Uncert. (2σ+/-)					
Gross Alpha	3.01	U G	0.5800	U G	2.01	3.00	3.72	pCi/L	0.52	1
Gross Beta	1.59	U	4.724		1.78	4.00	2.42	pCi/L	1.06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-287912/1-A
Matrix: Water
Analysis Batch: 287854

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 287912

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-5.927	U	11.0	11.1	20.0	18.6	pCi/L	01/16/17 14:43	01/16/17 15:18	1
Potassium-40	42.04	U	122	123		176	pCi/L	01/16/17 14:43	01/16/17 15:18	1

Lab Sample ID: LCS 160-287912/2-A
Matrix: Water
Analysis Batch: 287857

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 287912

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	129200		14900		401	pCi/L	95	90 - 111
Cesium-137	47100	47330		4740	20.0	95.2	pCi/L	100	90 - 111
Cobalt-60	40200	39360		3890		69.7	pCi/L	98	89 - 110

Lab Sample ID: 440-172760-1 DU
Matrix: Water
Analysis Batch: 287857

Client Sample ID: Outfall009_20170110_Comp
Prep Type: Total/NA
Prep Batch: 287912

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	-4.50	U	-1.525	U	7.29	20.0	12.7	pCi/L	0.18	1
Potassium-40	50.8	U	-93.61	U	158		217	pCi/L	0.52	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-287929/1-A
Matrix: Water
Analysis Batch: 291521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 287929

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01342	U	0.0682	0.0682	1.00	0.156	pCi/L	01/17/17 06:56	02/08/17 07:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	74.9		40 - 110					01/17/17 06:56	02/08/17 07:15	1

Lab Sample ID: LCS 160-287929/2-A
Matrix: Water
Analysis Batch: 291521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 287929

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.1	8.524		0.987	1.00	0.146	pCi/L	77	68 - 137
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	80.9		40 - 110						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-287929/3-A
 Matrix: Water
 Analysis Batch: 291521

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 287929

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.1	8.535		1.02	1.00	0.189	pCi/L	77	68 - 137	0.01	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	65.5		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-287932/1-A
 Matrix: Water
 Analysis Batch: 290911

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 287932

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.1258	U	0.228	0.228	1.00	0.426	pCi/L	01/17/17 07:58	02/03/17 12:44	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	74.9		40 - 110							
Y Carrier	78.1		40 - 110							
								Prepared	Analyzed	Dil Fac
								01/17/17 07:58	02/03/17 12:44	1
								01/17/17 07:58	02/03/17 12:44	1

Lab Sample ID: LCS 160-287932/2-A
 Matrix: Water
 Analysis Batch: 290911

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 287932

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.9	13.81		1.47	1.00	0.343	pCi/L	99	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	80.9		40 - 110						
Y Carrier	84.9		40 - 110						

Lab Sample ID: LCSD 160-287932/3-A
 Matrix: Water
 Analysis Batch: 290911

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 287932

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.9	14.16		1.55	1.00	0.443	pCi/L	102	56 - 140	0.12	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	65.5		40 - 110								
Y Carrier	86.4		40 - 110								

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110					01/31/17 11:55	02/13/17 15:14	1
Y Carrier	98.7		40 - 110					01/31/17 11:55	02/13/17 15:14	1

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
Carrier	MS %Yield	MS Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-291326/1-A
Matrix: Water
Analysis Batch: 291529

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 291326

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	189.2	U	191	192	500	313	pCi/L	02/07/17 09:35	02/07/17 22:05	1

Lab Sample ID: LCS 160-291326/2-A
Matrix: Water
Analysis Batch: 291529

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 291326

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	3090		445	500	299	pCi/L	105	74 - 114

Lab Sample ID: 160-20732-J-1-E MS
Matrix: Water
Analysis Batch: 291529

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 291326

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	104	U	2960	2941		444	500	322	pCi/L	99	67 - 130

Lab Sample ID: 160-20732-J-1-D DU
Matrix: Water
Analysis Batch: 291529

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 291326

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tritium	104	U	148.6	U	183	500	303	pCi/L	0.12	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-288715/1-A
Matrix: Water
Analysis Batch: 289598

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 288715

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.01155	U	0.06832	0.06833	1.00	0.127	pCi/L	01/23/17 10:49	01/27/17 13:17	1
Tracer	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	102		30 - 110					01/23/17 10:49	01/27/17 13:17	1

Lab Sample ID: LCS 160-288715/2-A
Matrix: Water
Analysis Batch: 289599

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 288715

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.56		1.44	1.00	0.117	pCi/L	99	84 - 120
Uranium-238	13.0	13.24		1.50	1.00	0.0912	pCi/L	102	83 - 121

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-288715/2-A
Matrix: Water
Analysis Batch: 289599

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 288715

	LCS	LCS	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	80.2		30 - 110

Lab Sample ID: LCSD 160-288715/3-A
Matrix: Water
Analysis Batch: 289600

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 288715

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qual</i>	<i>Total Uncert. (2σ+/-)</i>	<i>RL</i>	<i>MDC</i>	<i>Unit</i>	<i>%Rec</i>	<i>%Rec. Limits</i>		<i>RER Limit</i>	
									<i>RER</i>	<i>Limit</i>	<i>RER</i>	<i>Limit</i>
Uranium-234	12.7	12.82		1.48	1.00	0.0979	pCi/L	101	84 - 120	0.09	1	
Uranium-238	13.0	13.85		1.57	1.00	0.0606	pCi/L	106	83 - 121	0.20	1	

	LCSD	LCSD	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	77.2		30 - 110



QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Rad

Prep Batch: 287912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-287912/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-287912/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-172760-1 DU	Outfall009_20170110_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 287929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	PrecSep-21	
MB 160-287929/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-287929/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-287929/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 287932

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	PrecSep_0	
MB 160-287932/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-287932/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-287932/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 288715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	ExtChrom	
MB 160-288715/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-288715/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-288715/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

Prep Batch: 290284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	Evaporation	
MB 160-290284/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-290284/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-290284/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-172816-B-1-B MS	Matrix Spike	Total/NA	Water	Evaporation	
440-172816-B-1-C MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-172816-B-1-D DU	Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 291326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172760-1	Outfall009_20170110_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-291326/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-291326/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-20732-J-1-E MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-20732-J-1-D DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.



440-172760 Chain of Custody

Test America

CHAIN OF CUSTODY FORM

Client Name/Address:
 Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108
 Test America Contact: Urvasi Patel
 17461 Denair Ave Suite #100
 Irvine, CA 92614
 Tel: 949-260-3269
 Cell: 949-333-9055
 Sampler: Daniel Ear

Project:
 Boeing-SSFL NPDES
 Permit 2017
 Annual Outfall 003-007, 008, 010
 Outfall 008
 Comp

Project Manager: Nancy Gardiner
 619.265.7132, 659.337.4061 (cell)
 Field Manager: Mark Dominick
 818.350.7312, 818.598.0702 (cell)

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Beaker #	MS/MSD	Y, Al, Harness as CaCO3	Fe, Se, Cr, Ni, Sn, Ag, Zn, Pb, Hg, Cu	Total Recoverable Metals: Cu, Pb, Hg, B, Fe, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Tl, Zn, V, Al	Gross Alpha(900 D), Gross Beta(900 D), Tritium (T-3) (906 O), Sr-90 (905 O), Total Combined Radium 226 (903 D or 903 T) & Radium 228 (904 O), Uranium (908 O), K-40, Cs-137 (901 O or 901 T)	Chronic Toxicity - Selenium	Cyanide	Priority Pollutants-Pesticides+PCBs	Total Recoverable Metals: Mercury (245, 1)	Total Dissolved Metals: Mercury (245, 1)	Comments	
Outfall 008	Outfall009_20170110_Comp	1/10/2017 10:26	WM	500 mL Poly	3	HNO3	85	Yes	X										48 hours holding. These MOC & MOC
			WM	1 L Glass Amber	2	None	110	Yes											
			WM	500 mL Poly	6	None	135	Yes											
			WM	500 mL Poly	1	None	155	No											
			WM	1 L Poly	1	None	185	No											
			WM	500 mL Poly	3	NaOH	220	Yes											
			WM	2.5 Gal Cube	3	None	225	Yes											
			WM	1 L Glass Amber	3	None	230	Yes											
			WM	1 Gal Cube	6	None	235	No											
			WM	1 L Glass Amber	6	None	250	Yes											
			WM	homologate vials	3	HNO3	315	Yes											
			WM	1 L Poly	3	None	185	Yes											
			WM	homologate vials	3	None	320	Yes											
			WM	1 L Glass Amber	2	None	110	No											
			WM	500 mL Poly	2	None	135	No											
			WM	1 L Glass Amber	2	None	250	No											

Legend: R = Routine, A = Annual

Relinquished By: *[Signature]* Date/Time: 1/10/17 12:15 JHA Env. Company: *[Signature]* Date/Time: 1-10-17 12:15
 Relinquished By: *[Signature]* Date/Time: 1/10/17 10:26 Company: *[Signature]* Date/Time: 1/10/17 10:26
 Relinquished By: *[Signature]* Date/Time: 1/10/2017 10:26 Company: *[Signature]* Date/Time: 1/10/2017 10:26

Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check) In tact: _____ On Ice: _____
 Data Requirements: (Check) No Level IV: _____ All Level IV: _____

3-8/13-22
 3-2/2-0 2-8/2-2
 2-2/1-0 2-2/1-0
 1-3/0-7 1-2/1-0
 2-0/2-0

11/10/17

get to a vials for...
-chain and...



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172760-2

Login Number: 172760

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172760-2

Login Number: 172760

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/12/17 01:09 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0,18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)							
440-172760-1	Outfall009_20170110_Comp	77.8							
LCS 160-287929/2-A	Lab Control Sample	80.9							
LCSD 160-287929/3-A	Lab Control Sample Dup	65.5							
MB 160-287929/1-A	Method Blank	74.9							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
440-172760-1	Outfall009_20170110_Comp	77.8	85.2						
LCS 160-287932/2-A	Lab Control Sample	80.9	84.9						
LCSD 160-287932/3-A	Lab Control Sample Dup	65.5	86.4						
MB 160-287932/1-A	Method Blank	74.9	78.1						

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)						
440-172760-1	Outfall009_20170110_Comp	82.6	96.1						
440-174110-G-1-E MS	Matrix Spike	84.4	98.3						
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9						
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7						
MB 160-290301/1-A	Method Blank	84.3	98.7						

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)							
440-172760-1	Outfall009_20170110_Comp	75.7							
LCS 160-288715/2-A	Lab Control Sample	80.2							
LCSD 160-288715/3-A	Lab Control Sample Dup	77.2							
MB 160-288715/1-A	Method Blank	102							

Tracer/Carrier Legend

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing NPDES SSFL outfalls

TestAmerica Job ID: 440-172760-2

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-173872-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 1, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-173872-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170119_Grab	440-173872-1	N/A	Water	1/19/2017 8:05:00 AM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-173872-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1664 — HEXANE EXTRACTABLE MATERIAL

Marcia Hilchey of MEC^X reviewed the SDG on March 1, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Batch notes indicated that the analytical balance calibration was verified before and after each sample weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample/laboratory control sample duplicate recoveries were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401738721

Analysis Method *E1664*

Sample Name Outfall009_20170119_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/19/2017 8:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-173872-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.2	1.5	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-173872-1

Client Project/Site: Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/29/2017 10:17:02 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?

? **Ask
The
Expert**

Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/29/2017 10:17:02 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-173872-1	Outfall009_20170119_Grab	Water	01/19/17 08:05	01/19/17 14:55

- 1
- 2
- 3
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Job ID: 440-173872-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-173872-1

Comments

No additional comments.

Receipt

The samples were received on 1/19/2017 2:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-384776 and analytical batch 440-384865. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Client Sample ID: Outfall009_20170119_Grab

Lab Sample ID: 440-173872-1

Date Collected: 01/19/17 08:05

Matrix: Water

Date Received: 01/19/17 14:55

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.2	1.5	mg/L		01/27/17 06:09	01/27/17 10:45	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Client Sample ID: Outfall009_20170119_Grab

Lab Sample ID: 440-173872-1

Date Collected: 01/19/17 08:05

Matrix: Water

Date Received: 01/19/17 14:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			965 mL	1000 mL	384776	01/27/17 06:09	L1A	TAL IRV
Total/NA	Analysis	1664A		1			384865	01/27/17 10:45	L1A	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-384776/1-A
Matrix: Water
Analysis Batch: 384865

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384776

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/27/17 06:09	01/27/17 10:45	1

Lab Sample ID: LCS 440-384776/2-A
Matrix: Water
Analysis Batch: 384865

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384776

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	37.4		mg/L		93	78 - 114

Lab Sample ID: LCSD 440-384776/3-A
Matrix: Water
Analysis Batch: 384865

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384776

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.6		mg/L		92	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

General Chemistry

Prep Batch: 384776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-173872-1	Outfall009_20170119_Grab	Total/NA	Water	1664A	
MB 440-384776/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-384776/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-384776/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 384865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-173872-1	Outfall009_20170119_Grab	Total/NA	Water	1664A	384776
MB 440-384776/1-A	Method Blank	Total/NA	Water	1664A	384776
LCS 440-384776/2-A	Lab Control Sample	Total/NA	Water	1664A	384776
LCSD 440-384776/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	384776

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Outfall 009 Grab

TestAmerica Job ID: 440-173872-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 003-007, 009, 010 Outfall 009 Grab		Field Readings (Include units) Time of Readings: 0900 pH: 6.54 (pH unit) Temp: 7.35 °C/F		Meter serial # 0300	
Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Field Manager: Mark Dominick 818.350.7312, 818.589.0702 (cell)		Field readings QC Checked by: <i>[Signature]</i> Date/Time: 0805		Comments Store cell samples for 6 months	
Sampler: Daniel Ear / Mark Dominick		MS/MSD Bottle # Preservative # of Cont. Container Type Sample Matrix Sampling Date/Time		No. of Glass (164-HEM) No. X No. X		Hold 440-173872 Chain of Custody	
Sample Description Outfall 009	Sample I.D. Outfall009_20170119_Grab Outfall009_20170119_Grab_Extra	WM WM	1 L Glass Amber 1 L Glass Amber	2 2	HCl HCl	15 15	X X
Relinquished By: <i>[Signature]</i> Date/Time: 1/19/17		Company: JMA		0805		Received By: <i>[Signature]</i> Date/Time: 1/19/17 1115	
Relinquished By: <i>[Signature]</i> Date/Time: 1/19/17		Company:		1455		Received By: <i>[Signature]</i> Date/Time: 1/19/17 1415	
Relinquished By: <i>[Signature]</i> Date/Time:		Company:		Date/Time:		Sample Integrity: (Check) Intact: On Ice:	
Data Requirements: (Check) No Level IV:		All Level IV:		Turn-around time: (Check) 24 Hour: 72 Hour: 10 Day: 48 Hour: 5 Day: Normal:		✓	

2.0/1.7
1077

UTL



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-173872-1

Login Number: 173872

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174110-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-174110-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170120 _Comp	440-174110-1	N/A	Water	1/20/2017 9:30:00 AM	E200.7, E200.8, E218.6, E245.1, E300, EPA-821-R-02- 013, SM2540C, SM4500-CN-E
Outfall009_20170120 _Comp_F	440-174110-2	N/A	Water	1/20/2017 9:30:00 AM	E200.7, E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174110-1:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.

The following issue was noted:

- The client issued a list of revised sample collection dates and times which affected samples in this SDG. The revised collection times and dates are reflected in the SDG; therefore, the sample collection dates and times on the COC do not match those in the SDG. The collection information in the SDG was used for this report.
- Sample Outfall009_20170120_Comp was filtered by laboratory and was analyzed for metals. As the reviewer could not determine if the sample was preserved prior to filtration, the filtered results for this sample were rejected (R).



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHODS 200.7, 200.8, 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^X reviewed the SDG on March 3, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8 and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall009_20170120_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 4 days after receipt. All dissolved metals and mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall009_20170120_Comp (total metals) and Outfall009_20170120_Comp_F (dissolved metals). Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.



III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours for nitrate/nitrite as nitrogen
- 36 hours for chronic toxicity
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate

IV.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the lab. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blanks and CCBs had no detects.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits of 90-110% and the RPD for total cyanide was within the laboratory control limit of $\leq 10\%$.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on Outfall009_20170120_Comp for TDS. The RPD was within the laboratory control limit of $\leq 5\%$.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Outfall009_20170120_Comp for chloride, cyanide, and sulfate. Recoveries and RPDs were within the laboratory-established control limits for anions and the NFG control limits for cyanide.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401741101

Analysis Method E200.7

Sample Name Outfall009_20170120_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall009_20170120_Comp_F Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8

Sample Name Outfall009_20170120_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.83	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.4	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.7	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall009_20170120_Comp_F Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.75	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	5.7	2.0	0.50	ug/L	QP	J	H

Analysis Method E200.8

Lead	D	7439-92-1	0.57	1.0	0.50	ug/L	J,DXQP	J	DNQ, H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	UIB	U	

Sample Name Outfall009_20170120_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UIBQP	UJ	H

Analysis Method E300

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.2	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	0.44	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	4.2	0.50	0.25	mg/L			

Analysis Method EPA-821-R-02-013

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 9:30:00 AM **Validation Level:**

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	9.15			% SURV			

Analysis Method *SM2540C*

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	72	10	5.0	mg/L			

Analysis Method *SM4500-CN-E*

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174110-1

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/16/2017 10:04:09 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/16/2017 10:04:09 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174110-1	Outfall009_20170120_Comp	Water	01/20/17 09:30	01/20/17 15:03
440-174110-2	Outfall009_20170120_Comp_F	Water	01/20/17 09:30	01/20/17 15:03

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Job ID: 440-174110-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-174110-1**

Comments

No additional comments.

Receipt

The samples were received on 1/20/2017 1:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6° C, 1.5° C, 2.3° C and 3.1° C.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 245.1: The continuing calibration verification (CCV) associated with batch 440-384695 recovered above the upper control limit for <AffectedAnalytes>. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall009_20170120_Comp (440-174110-1).

Method(s) 245.1: The continuing calibration verification (CCV) associated with batch 440-384696 recovered above the upper control limit for Mercury. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: Outfall009_20170120_Comp_F (440-174110-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

Method Source Molecular-Human Bacteroidales: This method was subcontracted to TestAmerica Irvine. The subcontract laboratory certification is different from that of the facility issuing the final report.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.2		0.50	0.25	mg/L			01/20/17 19:21	1
Sulfate	4.2		0.50	0.25	mg/L			01/20/17 19:21	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.44		0.15	0.070	mg/L			01/30/17 14:17	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,7,8-PeCDD	0.000057	J,DX	0.000051	0.000009	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,7,8-PeCDF	0.000060	J,DX	0.000051	0.000005	ug/L		01/26/17 08:49	01/27/17 22:32	1
2,3,4,7,8-PeCDF	0.000051	J,DX	0.000051	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,4,7,8-HxCDD	0.000067	J,DX	0.000051	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,6,7,8-HxCDD	0.000069	J,DX	0.000051	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,7,8,9-HxCDD	0.000069	J,DX	0.000051	0.000005	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,4,7,8-HxCDF	0.000060	J,DX	0.000051	0.000009	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,6,7,8-HxCDF	0.000064	J,DX	0.000051	0.000008	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,7,8,9-HxCDF	0.000063	J,DX	0.000051	0.000005	ug/L		01/26/17 08:49	01/27/17 22:32	1
2,3,4,6,7,8-HxCDF	0.000066	J,DX	0.000051	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,4,6,7,8-HpCDD	0.000018	J,DX MB	0.000051	0.000007	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,4,6,7,8-HpCDF	0.000011	J,DX MB	0.000051	0.000003	ug/L		01/26/17 08:49	01/27/17 22:32	1
1,2,3,4,7,8,9-HpCDF	0.000078	J,DX MB	0.000051	0.000003	ug/L		01/26/17 08:49	01/27/17 22:32	1
OCDD	0.00011	MB	0.00010	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
OCDF	0.000022	J,DX MB	0.00010	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total TCDD	ND		0.000010	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total TCDF	0.000035	J,DX	0.000010	0.000005	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total PeCDD	0.000057	J,DX	0.000051	0.000009	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total PeCDF	0.000011	J,DX	0.000051	0.000005	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total HxCDD	0.000020	J,DX	0.000051	0.000006	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total HxCDF	0.000025	J,DX	0.000051	0.000007	ug/L		01/26/17 08:49	01/27/17 22:32	1
Total HpCDD	0.000030	J,DX MB	0.000051	0.000007	ug/L		01/26/17 08:49	01/27/17 22:32	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	0.000022	J,DX MB	0.000051	0.0000003	ug/L		01/26/17 08:49	01/27/17 22:32	1
5									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	72		25 - 164				01/26/17 08:49	01/27/17 22:32	1
13C-2,3,7,8-TCDF	65		24 - 169				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,7,8-PeCDD	76		25 - 181				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,7,8-PeCDF	68		24 - 185				01/26/17 08:49	01/27/17 22:32	1
13C-2,3,4,7,8-PeCDF	68		21 - 178				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,6,7,8-HxCDF	63		26 - 123				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147				01/26/17 08:49	01/27/17 22:32	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,4,6,7,8-HpCDD	89		23 - 140				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143				01/26/17 08:49	01/27/17 22:32	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138				01/26/17 08:49	01/27/17 22:32	1
13C-OCDD	101		17 - 157				01/26/17 08:49	01/27/17 22:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				01/26/17 08:49	01/27/17 22:32	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	0.0000021	J,DX	0.000010	0.0000017	ug/L		01/26/17 08:49	01/30/17 13:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	63		24 - 169				01/26/17 08:49	01/30/17 13:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				01/26/17 08:49	01/30/17 13:23	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/03/17 08:45	02/03/17 13:27	1
Zinc	ND		20	10	ug/L		02/03/17 08:45	02/03/17 13:27	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/27/17 12:58	01/28/17 14:24	1
Copper	3.4		2.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:24	1
Lead	1.7		1.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:24	1
Antimony	0.83	J,DX	2.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:24	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:24	1
Thallium	ND		1.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:24	1
Silver	ND		1.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:24	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB	0.20	0.10	ug/L		01/25/17 12:19	01/26/17 14:25	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	72		10	5.0	mg/L			01/26/17 08:21	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:16	1

Client Sample ID: Outfall009_20170120_Comp_F

Lab Sample ID: 440-174110-2

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	QP	10	5.0	ug/L		02/03/17 15:30	02/03/17 15:57	1
Zinc	ND	QP	20	10	ug/L		02/03/17 15:30	02/03/17 15:57	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/26/17 10:03	01/27/17 19:29	1
Copper	5.7	QP	2.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:29	1
Lead	0.57	J,DX QP	1.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:29	1
Antimony	0.75	J,DX QP	2.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:29	1
Selenium	ND	QP	2.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:29	1
Thallium	ND	QP	1.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:29	1
Silver	ND	QP	1.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:29	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB QP	0.20	0.10	ug/L		01/25/17 12:45	01/26/17 15:41	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			383435	01/20/17 19:21	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385246	01/30/17 14:17	NN	TAL IRV
Total/NA	Prep	1613B			973.6 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148158	01/27/17 22:32	SMA	TAL SAC
Total/NA	Prep	1613B	RA		973.6 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 13:23	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	386284	02/03/17 08:45	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			386392	02/03/17 13:27	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	384889	01/27/17 12:58	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			385151	01/28/17 14:24	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384330	01/25/17 12:19	DB	TAL IRV
Total/NA	Analysis	245.1		1			384695	01/26/17 14:25	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384518	01/26/17 08:21	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	383875	01/23/17 14:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384201	01/24/17 19:16	SN	TAL IRV

Client Sample ID: Outfall009_20170120_Comp_F

Lab Sample ID: 440-174110-2

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			150 mL	150 mL	384139	01/24/17 15:32	B1H	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	386434	02/03/17 15:30	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			386446	02/03/17 15:57	B1H	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	384139	01/24/17 15:32	B1H	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	384553	01/26/17 10:03	IH1	TAL IRV
Dissolved	Analysis	200.8		1			385019	01/27/17 19:29	RC	TAL IRV
Dissolved	Filtration	FILTRATION			150 mL	150 mL	384139	01/24/17 15:32	B1H	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	384344	01/25/17 12:45	DB	TAL IRV
Dissolved	Analysis	245.1		1			384696	01/26/17 15:41	DB	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383435/5
Matrix: Water
Analysis Batch: 383435

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/20/17 12:06	1
Sulfate	ND		0.50	0.25	mg/L			01/20/17 12:06	1

Lab Sample ID: LCS 440-383435/2
Matrix: Water
Analysis Batch: 383435

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.74		mg/L		95	90 - 110
Sulfate	5.00	4.94		mg/L		99	90 - 110

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 383435

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.2		5.00	9.30		mg/L		102	80 - 120
Sulfate	4.2		5.00	9.26		mg/L		102	80 - 120

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 383435

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.2		5.00	9.36		mg/L		103	80 - 120	1	20
Sulfate	4.2		5.00	9.34		mg/L		104	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.00000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDD	0.00000700	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-386284/1-A
Matrix: Water
Analysis Batch: 386392

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 386284

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/03/17 08:45	02/03/17 13:22	1
Zinc	ND		20	10	ug/L		02/03/17 08:45	02/03/17 13:22	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-386284/2-A
Matrix: Water
Analysis Batch: 386392

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 386284

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	500	513		ug/L		103	85 - 115
Zinc	500	485		ug/L		97	85 - 115

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 386392

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total Recoverable
Prep Batch: 386284

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		500	518		ug/L		104	70 - 130
Zinc	ND		500	491		ug/L		98	70 - 130

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 386392

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total Recoverable
Prep Batch: 386284

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		500	508		ug/L		102	70 - 130	2	20
Zinc	ND		500	480		ug/L		96	70 - 130	2	20

Lab Sample ID: MB 440-384139/1-F
Matrix: Water
Analysis Batch: 386446

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 386434

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/03/17 15:30	02/03/17 15:53	1
Zinc	ND		20	10	ug/L		02/03/17 15:30	02/03/17 15:53	1

Lab Sample ID: LCS 440-384139/2-F
Matrix: Water
Analysis Batch: 386446

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 386434

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	500	507		ug/L		101	85 - 115
Zinc	500	476		ug/L		95	85 - 115

Lab Sample ID: 440-174110-2 MS
Matrix: Water
Analysis Batch: 386446

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 386434

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND	QP	500	505		ug/L		101	70 - 130
Zinc	ND	QP	500	472		ug/L		94	70 - 130

Lab Sample ID: 440-174110-2 MSD
Matrix: Water
Analysis Batch: 386446

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 386434

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND	QP	500	492		ug/L		98	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174110-2 MSD
Matrix: Water
Analysis Batch: 386446

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 386434

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	ND	QP	500	461		ug/L		92	70 - 130	2	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-384889/1-A
Matrix: Water
Analysis Batch: 385151

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384889

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/27/17 12:58	01/28/17 14:19	1
Copper	ND		2.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:19	1
Lead	ND		1.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:19	1
Antimony	ND		2.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:19	1
Selenium	ND		2.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:19	1
Thallium	ND		1.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:19	1
Silver	ND		1.0	0.50	ug/L		01/27/17 12:58	01/28/17 14:19	1

Lab Sample ID: LCS 440-384889/2-A
Matrix: Water
Analysis Batch: 385151

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384889

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	72.9		ug/L		91	85 - 115
Copper	80.0	70.6		ug/L		88	85 - 115
Lead	80.0	70.4		ug/L		88	85 - 115
Antimony	80.0	84.1		ug/L		105	85 - 115
Selenium	80.0	68.7		ug/L		86	85 - 115
Thallium	80.0	72.5		ug/L		91	85 - 115
Nickel	80.0	70.0		ug/L		87	85 - 115
Silver	80.0	71.8		ug/L		90	85 - 115
Zinc	80.0	70.3		ug/L		88	85 - 115

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 385151

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total Recoverable
Prep Batch: 384889

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	72.2		ug/L		90	70 - 130
Copper	3.4		80.0	72.8		ug/L		87	70 - 130
Lead	1.7		80.0	71.8		ug/L		88	70 - 130
Antimony	0.83	J,DX	80.0	83.5		ug/L		103	70 - 130
Selenium	ND		80.0	70.5		ug/L		88	70 - 130
Thallium	ND		80.0	74.1		ug/L		93	70 - 130
Nickel	1.6	J,DX MB	80.0	69.1		ug/L		84	70 - 130
Silver	ND		80.0	71.8		ug/L		90	70 - 130
Zinc	6.3	J,DX	80.0	76.1		ug/L		87	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 385151

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total Recoverable
Prep Batch: 384889

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Cadmium	ND		80.0	75.7		ug/L		95	70 - 130	5	20
Copper	3.4		80.0	76.6		ug/L		91	70 - 130	5	20
Lead	1.7		80.0	75.6		ug/L		92	70 - 130	5	20
Antimony	0.83	J,DX	80.0	87.9		ug/L		109	70 - 130	5	20
Selenium	ND		80.0	73.6		ug/L		92	70 - 130	4	20
Thallium	ND		80.0	78.1		ug/L		98	70 - 130	5	20
Nickel	1.6	J,DX MB	80.0	72.9		ug/L		89	70 - 130	5	20
Silver	ND		80.0	75.3		ug/L		94	70 - 130	5	20
Zinc	6.3	J,DX	80.0	80.1		ug/L		92	70 - 130	5	20

Lab Sample ID: MB 440-384139/1-C
Matrix: Water
Analysis Batch: 385019

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 384553

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		01/26/17 10:03	01/27/17 19:17	1
Copper	ND		2.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:17	1
Lead	ND		1.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:17	1
Antimony	ND		2.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:17	1
Selenium	ND		2.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:17	1
Thallium	ND		1.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:17	1
Silver	ND		1.0	0.50	ug/L		01/26/17 10:03	01/27/17 19:17	1

Lab Sample ID: LCS 440-384139/2-C
Matrix: Water
Analysis Batch: 385019

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 384553

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
		Added	Result				Qualifier
Cadmium	80.0	76.0		ug/L		95	85 - 115
Copper	80.0	74.8		ug/L		94	85 - 115
Lead	80.0	74.0		ug/L		93	85 - 115
Antimony	80.0	86.8		ug/L		109	85 - 115
Selenium	80.0	74.3		ug/L		93	85 - 115
Thallium	80.0	75.8		ug/L		95	85 - 115
Nickel	80.0	73.8		ug/L		92	85 - 115
Silver	80.0	76.1		ug/L		95	85 - 115
Zinc	80.0	77.8		ug/L		97	85 - 115

Lab Sample ID: 440-174110-2 MS
Matrix: Water
Analysis Batch: 385019

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 384553

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				Limits
Cadmium	ND	QP	80.0	78.6		ug/L		98	70 - 130
Copper	5.7	QP	80.0	79.6		ug/L		92	70 - 130
Lead	0.57	J,DX QP	80.0	76.9		ug/L		95	70 - 130
Antimony	0.75	J,DX QP	80.0	89.8		ug/L		111	70 - 130
Selenium	ND	QP	80.0	77.1		ug/L		96	70 - 130
Thallium	ND	QP	80.0	81.0		ug/L		101	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174110-2 MS
Matrix: Water
Analysis Batch: 385019

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 384553

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Nickel	1.2	J,DX QP	80.0	74.9		ug/L		92		70 - 130
Silver	ND	QP	80.0	76.7		ug/L		96		70 - 130
Zinc	5.4	J,DX QP	80.0	83.7		ug/L		98		70 - 130

Lab Sample ID: 440-174110-2 MSD
Matrix: Water
Analysis Batch: 385019

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 384553

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Cadmium	ND	QP	80.0	81.5		ug/L		102		70 - 130	4	20
Copper	5.7	QP	80.0	82.6		ug/L		96		70 - 130	4	20
Lead	0.57	J,DX QP	80.0	79.0		ug/L		98		70 - 130	3	20
Antimony	0.75	J,DX QP	80.0	93.3		ug/L		116		70 - 130	4	20
Selenium	ND	QP	80.0	78.6		ug/L		98		70 - 130	2	20
Thallium	ND	QP	80.0	81.9		ug/L		102		70 - 130	1	20
Nickel	1.2	J,DX QP	80.0	77.1		ug/L		95		70 - 130	3	20
Silver	ND	QP	80.0	80.8		ug/L		101		70 - 130	5	20
Zinc	5.4	J,DX QP	80.0	85.7		ug/L		100		70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384330/1-A
Matrix: Water
Analysis Batch: 384695

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384330

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Mercury	ND	IB	0.20	0.10	ug/L		01/25/17 12:19	01/26/17 14:20		1

Lab Sample ID: LCS 440-384330/2-A
Matrix: Water
Analysis Batch: 384695

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384330

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
		Result	Qualifier					
Mercury	8.00	8.13	IB	ug/L		102		85 - 115

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 384695

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 384330

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
Mercury	ND	IB	8.00	8.40	IB	ug/L		105		70 - 130

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 384695

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 384330

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier							
Mercury	ND	IB	8.00	8.65	IB	ug/L		108		70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-384139/1-B
Matrix: Water
Analysis Batch: 384696

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 384344

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	IB	0.20	0.10	ug/L		01/25/17 12:45	01/26/17 15:35	1

Lab Sample ID: LCS 440-384139/2-B
Matrix: Water
Analysis Batch: 384696

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 384344

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.65	IB	ug/L		108	85 - 115

Lab Sample ID: 440-174110-2 MS
Matrix: Water
Analysis Batch: 384696

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 384344

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	IB QP	8.00	8.55	IB	ug/L		107	70 - 130

Lab Sample ID: 440-174110-2 MSD
Matrix: Water
Analysis Batch: 384696

Client Sample ID: Outfall009_20170120_Comp_F
Prep Type: Dissolved
Prep Batch: 384344

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	IB QP	8.00	8.71	IB	ug/L		109	70 - 130	2	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384518/1
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:21	1

Lab Sample ID: LCS 440-384518/2
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1020		mg/L		102	90 - 110

Lab Sample ID: 440-174110-1 DU
Matrix: Water
Analysis Batch: 384518

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	72		71.0		mg/L		1	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-383875/1-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383875

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:16	1

Lab Sample ID: LCS 440-383875/2-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	96.4		ug/L		96	90 - 110

Lab Sample ID: LCSD 440-383875/3-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	93.3		ug/L		93	90 - 110	3	10

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	98.3		ug/L		98	70 - 115

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	100		ug/L		100	70 - 115	2	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

HPLC/IC

Analysis Batch: 383435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	300.0	
MB 440-383435/5	Method Blank	Total/NA	Water	300.0	
LCS 440-383435/2	Lab Control Sample	Total/NA	Water	300.0	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	300.0	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	300.0	

Analysis Batch: 385246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	1613B	
440-174110-1 - RA	Outfall009_20170120_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	1613B	147877
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCSD 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1 - RA	Outfall009_20170120_Comp	Total/NA	Water	1613B	147877

Metals

Filtration Batch: 384139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	FILTRATION	
MB 440-384139/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-384139/1-C	Method Blank	Dissolved	Water	FILTRATION	
MB 440-384139/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-384139/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-384139/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-384139/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	FILTRATION	
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 384330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	245.1	
MB 440-384330/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384330/2-A	Lab Control Sample	Total/NA	Water	245.1	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Metals (Continued)

Prep Batch: 384330 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	245.1	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	245.1	

Prep Batch: 384344

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	245.1	384139
MB 440-384139/1-B	Method Blank	Dissolved	Water	245.1	384139
LCS 440-384139/2-B	Lab Control Sample	Dissolved	Water	245.1	384139
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	245.1	384139
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	245.1	384139

Prep Batch: 384553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	200.2	384139
MB 440-384139/1-C	Method Blank	Dissolved	Water	200.2	384139
LCS 440-384139/2-C	Lab Control Sample	Dissolved	Water	200.2	384139
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	200.2	384139
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	200.2	384139

Analysis Batch: 384695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	245.1	384330
MB 440-384330/1-A	Method Blank	Total/NA	Water	245.1	384330
LCS 440-384330/2-A	Lab Control Sample	Total/NA	Water	245.1	384330
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	245.1	384330
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	245.1	384330

Analysis Batch: 384696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	245.1	384344
MB 440-384139/1-B	Method Blank	Dissolved	Water	245.1	384344
LCS 440-384139/2-B	Lab Control Sample	Dissolved	Water	245.1	384344
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	245.1	384344
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	245.1	384344

Prep Batch: 384889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total Recoverable	Water	200.2	
MB 440-384889/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-384889/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174110-1 MS	Outfall009_20170120_Comp	Total Recoverable	Water	200.2	
440-174110-1 MSD	Outfall009_20170120_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 385019

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	200.8	384553
MB 440-384139/1-C	Method Blank	Dissolved	Water	200.8	384553
LCS 440-384139/2-C	Lab Control Sample	Dissolved	Water	200.8	384553
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	200.8	384553
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	200.8	384553

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Metals (Continued)

Analysis Batch: 385151

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total Recoverable	Water	200.8	384889
MB 440-384889/1-A	Method Blank	Total Recoverable	Water	200.8	384889
LCS 440-384889/2-A	Lab Control Sample	Total Recoverable	Water	200.8	384889
440-174110-1 MS	Outfall009_20170120_Comp	Total Recoverable	Water	200.8	384889
440-174110-1 MSD	Outfall009_20170120_Comp	Total Recoverable	Water	200.8	384889

Prep Batch: 386284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total Recoverable	Water	200.2	
MB 440-386284/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-386284/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174110-1 MS	Outfall009_20170120_Comp	Total Recoverable	Water	200.2	
440-174110-1 MSD	Outfall009_20170120_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 386392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total Recoverable	Water	200.7 Rev 4.4	386284
MB 440-386284/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	386284
LCS 440-386284/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	386284
440-174110-1 MS	Outfall009_20170120_Comp	Total Recoverable	Water	200.7 Rev 4.4	386284
440-174110-1 MSD	Outfall009_20170120_Comp	Total Recoverable	Water	200.7 Rev 4.4	386284

Prep Batch: 386434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	200.2	384139
MB 440-384139/1-F	Method Blank	Dissolved	Water	200.2	384139
LCS 440-384139/2-F	Lab Control Sample	Dissolved	Water	200.2	384139
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	200.2	384139
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	200.2	384139

Analysis Batch: 386446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-2	Outfall009_20170120_Comp_F	Dissolved	Water	200.7 Rev 4.4	386434
MB 440-384139/1-F	Method Blank	Dissolved	Water	200.7 Rev 4.4	386434
LCS 440-384139/2-F	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	386434
440-174110-2 MS	Outfall009_20170120_Comp_F	Dissolved	Water	200.7 Rev 4.4	386434
440-174110-2 MSD	Outfall009_20170120_Comp_F	Dissolved	Water	200.7 Rev 4.4	386434

General Chemistry

Prep Batch: 383875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	Distill/CN	
MB 440-383875/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	Distill/CN	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

General Chemistry (Continued)

Analysis Batch: 384201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	SM 4500 CN E	383875
MB 440-383875/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	383875
LCSD 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	383875
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	SM 4500 CN E	383875
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	SM 4500 CN E	383875

Analysis Batch: 384518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	SM 2540C	
MB 440-384518/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384518/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174110-1 DU	Outfall009_20170120_Comp	Total/NA	Water	SM 2540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
IB	CCV recovery above limit; analyte not detected
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall0009_20170120_Comp (440-174110-1)
DATE RECEIVED: 21 Jan - 17
ABC LAB NO.: TAM0117.179

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 9.15 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 08 Feb-17 16:46 (p 1 of 1)
 Test Code: TAM0117.179sel | 16-5847-8702

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 18-2427-0897	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 09:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 86h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 01-4252-5540	Code: TAM0117.179s	Client: Test America Irvine
Sample Date: 20 Jan-17 02:04	Material: Sample Water	Project: Boeing NPDES SSFL Outfall 009 Com
Receipt Date: 21 Jan-17 11:52	Source: Bioassay Report	
Sample Age: 79h (1.4 °C)	Station: Outfall0009_20170120_Comp (440-174110)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-6145-1073	Cell Density	TST-Welch's t Test	5.5E-04	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
05-6145-1073	Cell Density	Control CV	0.02809	<<	0.2	Yes	Passes Criteria
05-6145-1073	Cell Density	Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.398E+6	1.519E+6	1.458E+4	4.123E+4	2.81%	0.00%
100		8	1.334E+6	1.234E+6	1.434E+6	1.190E+6	1.502E+6	4.236E+4	1.198E+5	8.98%	9.15%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		1.272E+6	1.495E+6	1.323E+6	1.190E+6	1.202E+6	1.388E+6	1.298E+6	1.502E+6

CETIS Analytical Report

Report Date: 08 Feb-17 16:46 (p 1 of 2)
 Test Code: TAM0117.179set | 16-5847-8702

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 05-6145-1073	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 08 Feb-17 16:45	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes			
Batch ID: 18-2427-0897	Test Type: Cell Growth	Analyst:			
Start Date: 23 Jan-17 09:30	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 27 Jan-17	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 86h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 01-4252-5540	Code: TAM0117.179s	Client: Test America Irvine			
Sample Date: 20 Jan-17 02:04	Material: Sample Water	Project: Boeing NPDES SSFL Outfall 009 Com			
Receipt Date: 21 Jan-17 11:52	Source: Bioassay Report				
Sample Age: 79h (1.4 °C)	Station: Outfall0009_20170120_Comp (440-174110)				

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	5.32	0.7111	7	CDF	5.5E-04	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02809	<<	0.2	Yes	Passes Criteria
Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	7.209E+10	7.209E+10	1	8.981	0.0096	Significant Effect
Error	1.124E+11	8.027E+09	14			
Total	1.845E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	7.307	8.862	0.0172	Equal Variances
Variances	Mod Levene Equality of Variance Test	5.259	8.862	0.0378	Equal Variances
Variances	Variance Ratio F Test	8.442	8.885	0.0116	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.3684	3.878	0.4335	Normal Distribution
Distribution	D'Agostino Skewness Test	0.7349	2.576	0.4624	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1404	0.2471	0.5787	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9508	0.8408	0.5022	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.478E+6	1.398E+6	1.519E+6	1.458E+4	2.81%	0.00%
100		8	1.334E+6	1.234E+6	1.434E+6	1.310E+6	1.190E+6	1.502E+6	4.236E+4	8.98%	9.15%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		1.272E+6	1.495E+6	1.323E+6	1.190E+6	1.202E+6	1.388E+6	1.298E+6	1.502E+6

CETIS Measurement Report

Report Date: 08 Feb-17 16:46 (p 1 of 2)
 Test Code: TAM0117.179sel | 16-5847-8702

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	18-2427-0897	Test Type:	Cell Growth	Analyst:			
Start Date:	23 Jan-17 09:30	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	27 Jan-17	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	86h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	01-4252-5540	Code:	TAM0117.179s	Client:	Test America Irvine		
Sample Date:	20 Jan-17 02:04	Material:	Sample Water	Project:	Boeing NPDES SSFL Outfall 009 Com		
Receipt Date:	21 Jan-17 11:52	Source:	Bioassay Report				
Sample Age:	79h (1.4 °C)	Station:	Outfall0009_20170120_Comp (440-174110)				

Alkalinity (CaCO3)-mg/L											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	51			51	51	0	0	0.0%	0
Overall		2	60	-54.36	174.4	51	69	9	12.73	21.21%	0 (0%)

Conductivity-µmhos											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	438	451.2	439	452	2.379	5.32	1.2%	0
100		5	197.6	188.2	207	189	206	3.37	7.537	3.81%	0
Overall		10	321.1	227.9	414.3	189	452	41.21	130.3	40.59%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	55			55	55	0	0	0.0%	0
Overall		2	76	-190.8	342.8	55	97	21	29.7	39.08%	0 (0%)

pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.76	7.474	8.046	7.5	8	0.103	0.2302	2.97%	0
Overall		10	7.64	7.485	7.795	7.4	8	0.06864	0.2171	2.84%	0 (0%)

Temperature-°C											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.16	24.02	24.3	24	24.5	0.06182	0.1955	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 08 Feb-17 16:46 (p 2 of 2)
 Test Code: TAM0117.179sel | 16-5847-8702

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		51

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	447	452	439	440	445
100		189	193	195	205	206

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		55

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.7	7.4	7.4	7.5	7.6
100		8	7.6	7.5	7.7	8

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.2	24.5	24	24.1	24
100		24.2	24.5	24	24.1	24



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TestAmerica Irvine
17461 Dehan Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)

Client Contact: Shipping/Receiving
Company: Aquatic Bioassay
Address: 29 North Olive Street,
City: Ventura
State, Zip: CA, 93001
Phone:
Email:
Project Name: Boeing NPDES SSFL Outfall 009 Comp
Site: SCSOW#:
Sampler: Patel, Urvashi
Phone: E-Mail: urvashi.patel@testamericainc.com
Accreditations Required (See note):
Carrier Tracking No. (S):
State of Origin: California
COC No: 440-106700-1
Page: Page 1 of 1
Job #: 440-174110-1

Date Requested: 1/31/2017
TAT Requested (days):
Date: 1/31/2017
Time: 12:00
Method of Shipment:

Analysis Requested: SUB (Chronic-Selenium) Chronic-Selenium

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=soil, B=fish, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of containers	Special Instructions/Note:
Outfall0009_20170120_Comp (440-174110-1)	1/20/17	02:04 Pacific	Water		X			6	
							Temp. deg C = 14.9 C		
							Chlorine (mg/L) = 40.1		
							NH3 (mg/L) = 0.2		

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Relinquished by: *VV Bank* Date/Time: 1/30/17 17:00 Company: *TH*
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Custody Seals Intact: Yes No Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks:

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

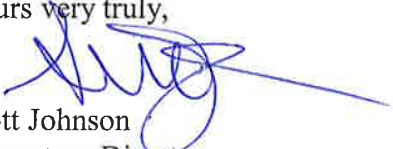
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID:	12-5258-0943	Endpoint:	Cell Density	CETIS Version:	CETISv1.9.2
Analyzed:	19 Jan-17 16:21	Analysis:	Parametric-Control vs Treatments	Official Results:	Yes
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:	
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:	
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:	
Receipt Date:		Source:	Reference Toxicant		
Sample Age:	n/a	Station:	REF TOX		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

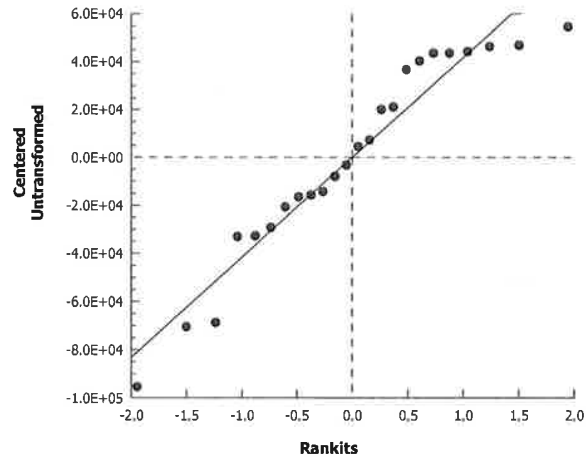
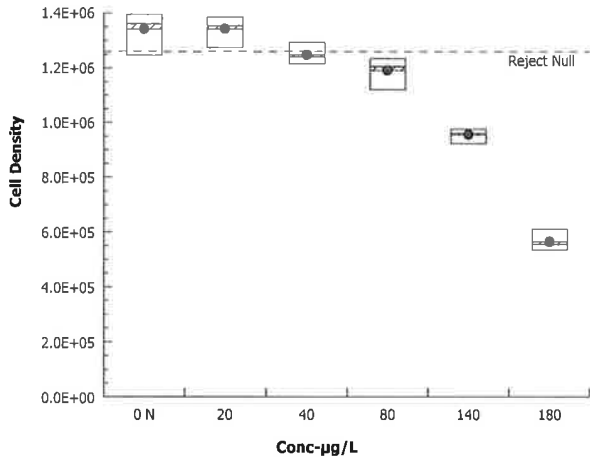
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test											Aquatic Bioassay & Consulting Labs, Inc.
Temperature-°C											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L		
Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos						
Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L		
Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units						
Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C						
Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Lab PM: Patel, Urvashi		Carrier Tracking No(s): 440-106723.1	
Client Contact: urvashi.patel@testamericainc.com		Phone: urvashi.patel@testamericainc.com		E-Mail: urvashi.patel@testamericainc.com		State of Origin: California	
Company: TestAmerica Laboratories, Inc.		Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Email:	
Project Name: Boeing NPDES SSFL Outfall 009 Comp		Site:		Project #: 44009879		SSOWW	
Due Date Requested: 2/1/2017		TAT Requested (days):		Field Filtered Sample (Yes or No):		Perform MS/MSD (Yes or No):	
Sample Date: 1/20/17		Sample Time: 02 04 Pacific		Sample Type (C=Comp, G=grab):		Preservation Code: Water	
Sample Identification - Client ID (Lab ID): Outfall009_20170120_Comp (440-174110-1)		Matrix (Liquid, Solid, Other):		1613B/1613B_Sox_Sep_P Standard List w/ Toxins		X	
Total Number of Containers: 2		Special Instructions/Note: See OAS, Boeing_wiu to zero, up/L, Use Boeing glassware.		Analysis Requested:		Special Instructions/Note:	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months		Special Instructions/QC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Empty Kit Relinquished by:		Method of Shipment:	
Relinquished by: VubBanda		Date/Time: 1/23/17 17:00		Company: TAC		Received by: FedEx	
Relinquished by:		Date/Time:		Company:		Received by: Aug D. Thompson	
Relinquished by:		Date/Time:		Company:		Received by: 1/24/17 09:45	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0, 0°C Ice		Company: Thrus	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174110-1

Login Number: 174110

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174110-1

Login Number: 174110

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/25/17 11:45 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174110-1	Outfall009_20170120_Comp	72	65	76	68	68	73	72	64
440-174110-1 - RA	Outfall009_20170120_Comp		63						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174110-1	Outfall009_20170120_Comp	63	68	67	89	75	85	101	64
440-174110-1 - RA	Outfall009_20170120_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174110-1	Outfall009_20170120_Comp		63		68		67	89	
440-174110-1 - RA	Outfall009_20170120_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174110-1	Outfall009_20170120_Comp		75		85		101
440-174110-1 - RA	Outfall009_20170120_Comp						
MB 320-147877/1-A	Method Blank		69		78		96

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174110-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 6, 2017

MEC^x, Inc.
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Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174110-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170120_ Comp	440-174110-1	N/A	Water	1/20/2017 9:30:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod, 1613B



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174110-2:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit and the detect above the reporting limit for OCDD in the sample were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD and HpCDF in the samples included more peaks than the method blank totals. The sample results for totals HpCDD and HpCDF were therefore qualified as estimated (J) at the level of contamination.



III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample, and the initial result was confirmed. As the confirmation column is more specific for the detection of 2,3,7,8-TCDF, the initial result was rejected (R) in favor of the confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the reporting limit were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results detected below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL. Estimated maximum possible concentrations (EMPCs) were not detected in the sample.

IV. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.



IV.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

IV.2. CALIBRATION:

The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for these analytes including combined radium were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of cesium 137, tritium and gross beta. Cesium 137, tritium and gross beta were not different from the method blank at the 1% level of confidence and were therefore qualified as nondetects (U) in the site sample.

IV.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

IV.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on the sample in this SDG for cesium-137. The relative error ratio was greater than the laboratory control limit of ≤ 1 and the sample was qualified as estimated (UJ).

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

A matrix spike (MS)/MSD analysis was performed for the total uranium, gross alpha, gross beta, Ra-226, Ra-228, Sr-90 and tritium analysis. Recoveries and RPDs were within QC limits.

IV.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

IV.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

IV.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinse samples.

IV.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401741102

Analysis Method E1613B

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000022	0.00010	0.00000066	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00011	0.00010	0.00000064	ug/L	MB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000011	0.000051	0.00000033	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000018	0.000051	0.00000071	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000078	0.000051	0.00000037	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000060	0.000051	0.00000093	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000067	0.000051	0.00000068	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000064	0.000051	0.00000087	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000069	0.000051	0.00000069	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.0000063	0.000051	0.00000058	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000069	0.000051	0.00000057	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000060	0.000051	0.00000055	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000057	0.000051	0.00000095	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000066	0.000051	0.00000064	ug/L	J,DX	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.0000051	0.000051	0.00000062	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000020	0.000010	0.00000057	ug/L	J,DX	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000021	0.000010	0.0000017	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000063	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000022	0.000051	0.00000035	ug/L	J,DXMB	J	B, DNQ

Analysis Method *E1613B*

Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000030	0.000051	0.00000071	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000025	0.000051	0.00000076	ug/L	J,DX	J	DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000020	0.000051	0.00000065	ug/L	J,DX	J	DNQ
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.000011	0.000051	0.00000059	ug/L	J,DX	J	DNQ
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000057	0.000051	0.00000095	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000035	0.000010	0.00000057	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000063	ug/L	U	U	

Validated Sample Result Forms: 4401741102

Analysis Method E900

Sample Name Outfall009_20170120_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.552	0.786	1.32	1.32	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	1.23	0.584	0.798	0.798	pCi/L		U	B

Analysis Method E901.1

Sample Name Outfall009_20170120_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	14.2	8.71	11.9	11.9	pCi/L		UJ	B, E
Potassium-40	13966-00-2	-7.20	165	217	217	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170120_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0310	0.0726	0.136	0.136	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall009_20170120_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/20/2017 2:04:00 AM Validation Level: 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.0978	0.266	0.486	0.486	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.0527	0.277	0.508	0.508	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	455	229	332	332	pCi/L		U	B

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170120_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 2:04:00 AM **Validation Level:** 8

Lab Sample Name: 440-174110-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	-0.0861	0.333	0.772	0.772	pCi/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174110-2

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/22/2017 6:41:58 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/22/2017 6:41:58 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174110-1	Outfall009_20170120_Comp	Water	01/20/17 09:30	01/20/17 15:03

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Job ID: 440-174110-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174110-2

Comments

No additional comments.

Receipt

The samples were received on 1/20/2017 1:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.6° C, 1.5° C, 2.3° C and 3.1° C.

RAD

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences. Outfall009_20170120_Comp (440-174110-1), Outfall009_20170120_Comp (440-174110-1[MS]) and Outfall009_20170120_Comp (440-174110-1[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.552	U	0.784	0.786	3.00	1.32	pCi/L	02/14/17 09:45	02/19/17 20:18	1
Gross Beta	1.23		0.570	0.584	4.00	0.798	pCi/L	02/14/17 09:45	02/19/17 20:18	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	14.2		8.59	8.71	20.0	11.9	pCi/L	01/27/17 15:40	01/27/17 16:40	1
Potassium-40	-7.20	U	165	165		217	pCi/L	01/27/17 15:40	01/27/17 16:40	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0310	U	0.0725	0.0726	1.00	0.136	pCi/L	01/26/17 12:07	02/20/17 08:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					01/26/17 12:07	02/20/17 08:14	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0978	U	0.266	0.266	1.00	0.486	pCi/L	01/26/17 12:36	02/16/17 13:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					01/26/17 12:36	02/16/17 13:59	1
Y Carrier	83.4		40 - 110					01/26/17 12:36	02/16/17 13:59	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0527	U	0.277	0.277	3.00	0.508	pCi/L	01/31/17 11:55	02/13/17 17:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					01/31/17 11:55	02/13/17 17:07	1
Y Carrier	95.7		40 - 110					01/31/17 11:55	02/13/17 17:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	455		226	229	500	332	pCi/L	02/14/17 17:37	02/15/17 00:43	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.0861	U	0.332	0.333	1.00	0.772	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.9		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Client Sample ID: Outfall009_20170120_Comp

Lab Sample ID: 440-174110-1

Date Collected: 01/20/17 09:30

Matrix: Water

Date Received: 01/20/17 15:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292252	02/14/17 09:45	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	293157	02/19/17 20:18	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289561	01/27/17 15:40	R1S	TAL SL
Total/NA	Analysis	901.1		1			289568	01/27/17 16:40	CDR	TAL SL
Total/NA	Prep	PrecSep-21			999.02 mL	1.0 g	289254	01/26/17 12:07	BME	TAL SL
Total/NA	Analysis	903.0		1			293387	02/20/17 08:14	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.02 mL	1.0 g	289255	01/26/17 12:36	BME	TAL SL
Total/NA	Analysis	904.0		1			292783	02/16/17 13:59	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.38 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:07	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	292341	02/14/17 17:37	JDL	TAL SL
Total/NA	Analysis	906.0		1			292562	02/15/17 00:43	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.43 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292513	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292252/1-A
Matrix: Water
Analysis Batch: 293156

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292252

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.5587	U	0.742	0.744	3.00	1.24	pCi/L	02/14/17 09:45	02/19/17 20:13	1
Gross Beta	-0.1873	U	0.552	0.552	4.00	0.997	pCi/L	02/14/17 09:45	02/19/17 20:13	1

Lab Sample ID: LCS 160-292252/2-A
Matrix: Water
Analysis Batch: 293156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	36.80		5.61	3.00	1.69	pCi/L	74	73 - 133

Lab Sample ID: LCSB 160-292252/3-A
Matrix: Water
Analysis Batch: 293156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.1	94.91		10.0	4.00	1.14	pCi/L	104	75 - 125

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 293157

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.552	U	49.9	42.20		5.86	3.00	1.26	pCi/L	85	60 - 140

Lab Sample ID: 440-174110-1 MSBT
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	1.23		91.1	91.41		9.64	4.00	1.04	pCi/L	99	60 - 140

Lab Sample ID: 440-174110-1 MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Beta	1.23		91.1	91.09		9.62	4.00	0.941	pCi/L	99	60 - 140	0.02	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 292252

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	0.552	U	49.9	42.50		5.88	3.00	1.39	pCi/L	85	60 - 140	0.03	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289561/1-A
Matrix: Water
Analysis Batch: 289407

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289561

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Count Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.901	U	6.85	6.86	20.0	11.6	pCi/L	01/27/17 15:40	01/27/17 16:38	1
Potassium-40	-7.440	U	93.6	93.6		134	pCi/L	01/27/17 15:40	01/27/17 16:38	1

Lab Sample ID: LCS 160-289561/2-A
Matrix: Water
Analysis Batch: 289567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289561

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132800		15300		439	pCi/L	97	90 - 111
Cesium-137	47100	46010		4620	20.0	147	pCi/L	98	90 - 111
Cobalt-60	40100	38780		3840		86.2	pCi/L	97	89 - 110

Lab Sample ID: 440-174110-1 DU
Matrix: Water
Analysis Batch: 289571

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 289561

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	14.2		0.2417	U	9.45	20.0	12.1	pCi/L		0.77	1
Potassium-40	-7.20	U	19.79	U	120		176	pCi/L		0.09	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-289254/1-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289254

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Count Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02291	U	0.0750	0.0751	1.00	0.144	pCi/L	01/26/17 12:07	02/20/17 06:24	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		40 - 110					01/26/17 12:07	02/20/17 06:24	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-289254/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289254

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	6.435		0.781	1.00	0.138	pCi/L	107	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	87.9		40 - 110							

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 289254

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.0310	U	6.00	7.222		0.861	1.00	0.157	pCi/L	120	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	90.3		40 - 110								

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 289254

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0310	U	6.00	6.522		0.797	1.00	0.151	pCi/L	109	75 - 138	0.42	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	86.7		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-289255/1-A
Matrix: Water
Analysis Batch: 292783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289255

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.8602		0.326	0.335	1.00	0.460	pCi/L	01/26/17 12:36	02/16/17 13:44	1
Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Ba Carrier	93.2		40 - 110	01/26/17 12:36	02/16/17 13:44	1				
Y Carrier	82.2		40 - 110	01/26/17 12:36	02/16/17 13:44	1				

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-289255/2-A
Matrix: Water
Analysis Batch: 292777

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289255

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	17.33		1.86	1.00	0.551	pCi/L	125	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	87.9		40 - 110						
Y Carrier	82.2		40 - 110						

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 292783

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 289255

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.0978	U	13.8	16.08		1.73	1.00	0.459	pCi/L	116	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	90.3		40 - 110								
Y Carrier	83.7		40 - 110								

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 292783

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 289255

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.0978	U	13.8	16.54		1.78	1.00	0.474	pCi/L	120	45 - 150	0.13	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	86.7		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110								01/31/17 11:55	02/13/17 15:14	1
Y Carrier	98.7		40 - 110								01/31/17 11:55	02/13/17 15:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-292341/1-A
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292341

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-30.63	U	188	188	500	346	pCi/L	02/14/17 17:37	02/14/17 23:20	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-292341/2-A
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292341

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2896		456	500	336	pCi/L	98	74 - 114

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 292341

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	455		2950	3081		489	500	368	pCi/L	89	67 - 130

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 292562

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 292341

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	455		2950	3086		466	500	324	pCi/L	89	67 - 130	0.01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-1 MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual						Limits	Limit	
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65 - 146		
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68 - 143		
		<i>MS MS</i>											
Tracer	%Yield	Qualifier	Limits										
Uranium-232	78.6		30 - 110										

Lab Sample ID: 440-174110-1 MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Outfall009_20170120_Comp
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER	Limit	
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146	0.04	1	
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143	0.29	1	
		<i>MSD MSD</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	84.1		30 - 110											

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Result	Qual						Limits	Limit	
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146		
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143		
		<i>MS MS</i>											
Tracer	%Yield	Qualifier	Limits										
Uranium-232	78.6		30 - 110										

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER	Limit	
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146	0.22	1	
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143	0.35	1	
		<i>MSD MSD</i>												
Tracer	%Yield	Qualifier	Limits											
Uranium-232	86.7		30 - 110											

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Rad

Prep Batch: 289254

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	PrecSep-21	
MB 160-289254/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-289254/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	PrecSep-21	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	PrecSep-21	

Prep Batch: 289255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	PrecSep_0	
MB 160-289255/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-289255/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	PrecSep_0	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	PrecSep_0	

Prep Batch: 289561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289561/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289561/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174110-1 DU	Outfall009_20170120_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	PrecSep-7	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	ExtChrom	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	Evaporation	
MB 160-292252/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292252/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292252/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	Evaporation	
440-174110-1 MSBT	Outfall009_20170120_Comp	Total/NA	Water	Evaporation	
440-174110-1 MSBTD	Outfall009_20170120_Comp	Total/NA	Water	Evaporation	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	Evaporation	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Rad (Continued)

Prep Batch: 292341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174110-1	Outfall009_20170120_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-292341/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-292341/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174110-1 MS	Outfall009_20170120_Comp	Total/NA	Water	LSC_Dist_Susp	
440-174110-1 MSD	Outfall009_20170120_Comp	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174110-2

Login Number: 174110

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174110-2

Login Number: 174110

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/24/17 01:13 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174110-1	Outfall009_20170120_Comp	87.3
440-174110-1 MS	Outfall009_20170120_Comp	90.3
440-174110-1 MSD	Outfall009_20170120_Comp	86.7
LCS 160-289254/2-A	Lab Control Sample	87.9
MB 160-289254/1-A	Method Blank	93.2

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174110-1	Outfall009_20170120_Comp	87.3	83.4
440-174110-1 MS	Outfall009_20170120_Comp	90.3	83.7
440-174110-1 MSD	Outfall009_20170120_Comp	86.7	83.0
LCS 160-289255/2-A	Lab Control Sample	87.9	82.2
MB 160-289255/1-A	Method Blank	93.2	82.2

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174110-1	Outfall009_20170120_Comp	84.4	95.7
440-174110-1 MS	Outfall009_20170120_Comp	84.4	98.3
440-174110-1 MSD	Outfall009_20170120_Comp	84.9	97.9
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-1	Outfall009_20170120_Comp	87.9
440-174110-1 MS	Outfall009_20170120_Comp	78.6
440-174110-1 MSD	Outfall009_20170120_Comp	84.1

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174110-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174204-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174204-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170120_Grab	440-174204-1	N/A	Water	1/20/2017 5:15:00 PM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-174204-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1664A — OIL AND GREASE

Michael Cherny of MEC^X reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Batch notes indicated that the analytical balance calibration was verified before and after each sample weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG, as there was insufficient sample volume available and the COC did not request a MS/MSD. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either "J+" or "J-"; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated, "J," and coded with "DNQ," in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401742041

Analysis Method *E1664*

Sample Name Outfall009_20170120_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 5:15:00 PM **Validation Level:** 8

Lab Sample Name: 440-174204-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	4.9	1.4	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174204-1

Client Project/Site: Routine Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/31/2017 4:54:30 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/31/2017 4:54:30 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174204-1	Outfall009_20170120_Grab	Water	01/20/17 17:15	01/20/17 21:06

1

2

3

4

5

6

7

8

9

10

11

12

13

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Job ID: 440-174204-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174204-1

Comments

No additional comments.

Receipt

The samples were received on 1/20/2017 9:06 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.7° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385128 and analytical batch 440-385213. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Client Sample ID: Outfall009_20170120_Grab

Lab Sample ID: 440-174204-1

Date Collected: 01/20/17 17:15

Matrix: Water

Date Received: 01/20/17 21:06

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.9	1.4	mg/L		01/30/17 08:28	01/30/17 13:08	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Client Sample ID: Outfall009_20170120_Grab

Lab Sample ID: 440-174204-1

Date Collected: 01/20/17 17:15

Matrix: Water

Date Received: 01/20/17 21:06

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			1015 mL	1000 mL	385128	01/30/17 08:28	L2A	TAL IRV
Total/NA	Analysis	1664A		1			385213	01/30/17 13:08	L2A	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-385128/1-A
 Matrix: Water
 Analysis Batch: 385213

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 385128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		01/30/17 08:28	01/30/17 13:08	1

Lab Sample ID: LCS 440-385128/2-A
 Matrix: Water
 Analysis Batch: 385213

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 385128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	36.7		mg/L		92	78 - 114

Lab Sample ID: LCSD 440-385128/3-A
 Matrix: Water
 Analysis Batch: 385213

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 385128

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	35.9		mg/L		90	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

General Chemistry

Prep Batch: 385128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174204-1	Outfall009_20170120_Grab	Total/NA	Water	1664A	
MB 440-385128/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-385128/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-385128/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 385213

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174204-1	Outfall009_20170120_Grab	Total/NA	Water	1664A	385128
MB 440-385128/1-A	Method Blank	Total/NA	Water	1664A	385128
LCS 440-385128/2-A	Lab Control Sample	Total/NA	Water	1664A	385128
LCSD 440-385128/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	385128

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-174204-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174204-1

Login Number: 174204

List Number: 1

Creator: Skinner, Alma D

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174237-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 4, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-174237-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170121 _Comp	440-174237-1	N/A	Water	1/21/2017 03:15:00 PM	E1613B, E200.7, E200.8, E245.1, E300, EPA-821-R-02- 013, SM2540C, SM4500-CN-E
Outfall009_20170121 _Comp_F	440-174237-2	N/A	Water	1/21/2017 03:15:00 PM	E200.7, E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174237-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.

The following issue was noted:

The client issued a list of revised sample collection dates and times which affected samples in this SDG. The revised collection times and dates are reflected in the SDG; therefore, the sample collection dates and times on the COC do not match those in the SDG. The collection information in the SDG was used for this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result. The reviewer verified that peaks comprising totals HpCDD and HpCDF in the sample included more peaks than the method blank totals. The sample results for totals HpCDD and HpCDF were therefore qualified as estimated (J) at the level of contamination.



III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MECX^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MECX^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Reported EMPCs for isomers 1,2,3,4,7,8-HxCDD and 1,2,3,7,8,9-HxCDD were qualified as estimated nondetects (UJ). Totals HxCDD and HpCDF containing EMPC peaks were qualified as estimated (J).

Due to limited sample volume provided, the extracted sample volume of 962 milliliters was slightly less than the normal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.



IV. EPA METHODS 200.7, 200.8, 245.1 — METALS AND MERCURY

Marcia Hilchey of MECX reviewed the SDG on March 4, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MECX *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8 and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall009_20170121_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 9 days after receipt. All dissolved metals and mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values were ≥ 0.995 , y -intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries for target analytes were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the method control limits of 85-115% with the exception of the LCS for dissolved mercury (117%). The associated sample result was nondetect and was not qualified.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall009_20170121_Comp and Outfall009_20170121_Comp_F for Method 200.7, and on sample Outfall009_20170121_Comp_F for Method 200.8. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively. MS/MSD analyses were not performed on a sample in this SDG for total 200.8 analytes or for mercury.



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours for nitrate/nitrite as nitrogen
- 36 hours for chronic toxicity
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the lab.



For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The method blanks and CCBs had no detects.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits of 90-110% and the RPD for total cyanide was within the laboratory control limit of $\leq 10\%$.

V.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy and precision based on the LCS/LCSD results.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Any detects between the method detection limit and the reporting limit were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401742371

Analysis Method E1613B

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000031	0.00010	0.00000055	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00045	0.00010	0.00000077	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000014	0.000052	0.00000051	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000042	0.000052	0.00000090	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000010	0.000052	0.00000062	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	ND	0.000052	0.00000098	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.0000009	0.000052	0.00000055	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000052	0.00000096	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000027	0.000052	0.00000061	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000052	0.00000068	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000017	0.000052	0.00000048	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000052	0.00000058	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000052	0.00000098	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000052	0.00000073	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000052	0.00000056	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.0000013	0.000010	0.00000050	ug/L	J,DX	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000017	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000057	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000045	0.000052	0.00000056	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000094	0.000052	0.00000090	ug/L	MB	J	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000065	0.000052	0.00000084	ug/L	J,DX	J	DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000012	0.000052	0.00000055	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000013	0.000052	0.00000057	ug/L	J,DX	J	DNQ
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000052	0.00000098	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000025	0.000010	0.00000050	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000057	ug/L	U	U	

Analysis Method E200.7

Sample Name	Outfall009_20170121_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/21/2017 11:46:00 AM		Validation Level:	8					
Lab Sample Name:	440-174237-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	18	20	10	ug/L	J,DX	J	DNQ

Sample Name	Outfall009_20170121_Comp_F		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/21/2017 11:46:00 AM		Validation Level:	8					
Lab Sample Name:	440-174237-2								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8

Sample Name	Outfall009_20170121_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/21/2017 11:46:00 AM		Validation Level:	8					
Lab Sample Name:	440-174237-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.56	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	5.2	2.0	0.50	ug/L			
Lead	T	7439-92-1	4.6	1.0	0.50	ug/L			
Selenium	T	7782-49-2	0.55	2.0	0.50	ug/L	J,DX	J	DNQ

Analysis Method E200.8

Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall009_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:46:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174237-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.55	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	3.3	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	0.50	1.0	0.50	ug/L	J,DXQP	J	DNQ, H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1**Sample Name** Outfall009_20170121_Comp Matrix Type: WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:46:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174237-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall009_20170121_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:46:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174237-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	ULQQP	UJ	H

Analysis Method E300**Sample Name** Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 11:46:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174237-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.9	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	2.1	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	4.3	0.50	0.25	mg/L			

Analysis Method *EPA-821-R-02-013*

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 3:15:00 PM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	35.09			% SURV			

Analysis Method *SM2540C*

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	150	10	5.0	mg/L			

Analysis Method *SM4500-CN-E*

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174237-1

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/19/2017 12:14:46 AM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/19/2017 12:14:46 AM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174237-1	Outfall009_20170121_Comp	Water	01/21/17 15:15	01/22/17 16:15
440-174237-2	Outfall009_20170121_Comp_F	Water	01/21/17 15:15	01/22/17 16:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Job ID: 440-174237-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-174237-1**

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.1° C, 3.5° C and 3.9° C.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 245.1: The laboratory control sample (LCS) for preparation batch 440-385307 and 440-385533 and analytical batch 440-385844 recovered outside control limits for Mercury. These analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.9		0.50	0.25	mg/L			01/23/17 10:34	1
Sulfate	4.3		0.50	0.25	mg/L			01/23/17 10:34	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.1		0.15	0.070	mg/L			01/31/17 13:32	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,7,8-PeCDD	ND		0.000052	0.0000009	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,7,8-PeCDF	ND		0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
2,3,4,7,8-PeCDF	ND		0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,4,7,8-HxCDD	0.0000090	J,DX q	0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,6,7,8-HxCDD	0.0000027	J,DX	0.000052	0.0000006	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,7,8,9-HxCDD	0.0000017	J,DX q	0.000052	0.0000004	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,4,7,8-HxCDF	ND		0.000052	0.0000009	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,6,7,8-HxCDF	ND		0.000052	0.0000009	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,7,8,9-HxCDF	ND		0.000052	0.0000006	ug/L		01/26/17 08:49	01/28/17 08:15	1
2,3,4,6,7,8-HxCDF	ND		0.000052	0.0000007	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,4,6,7,8-HpCDD	0.000042	J,DX MB	0.000052	0.0000009	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,4,6,7,8-HpCDF	0.000014	J,DX MB	0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
1,2,3,4,7,8,9-HpCDF	0.0000010	J,DX q MB	0.000052	0.0000006	ug/L		01/26/17 08:49	01/28/17 08:15	1
OCDD	0.00045	MB	0.00010	0.0000007	ug/L		01/26/17 08:49	01/28/17 08:15	1
OCDF	0.000031	J,DX MB	0.00010	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total TCDD	ND		0.000010	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total TCDF	0.0000025	J,DX	0.000010	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total PeCDD	ND		0.000052	0.0000009	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total PeCDF	0.0000013	J,DX	0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total HxCDD	0.000012	J,DX q	0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total HxCDF	0.0000065	J,DX	0.000052	0.0000008	ug/L		01/26/17 08:49	01/28/17 08:15	1
Total HpCDD	0.000094	MB	0.000052	0.0000009	ug/L		01/26/17 08:49	01/28/17 08:15	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	0.000045	J,DX q MB	0.000052	0.0000005	ug/L		01/26/17 08:49	01/28/17 08:15	1
6									
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	69		25 - 164				01/26/17 08:49	01/28/17 08:15	1
13C-2,3,7,8-TCDF	61		24 - 169				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,7,8-PeCDD	73		25 - 181				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,7,8-PeCDF	63		24 - 185				01/26/17 08:49	01/28/17 08:15	1
13C-2,3,4,7,8-PeCDF	71		21 - 178				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,4,7,8-HxCDD	73		32 - 141				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,6,7,8-HxCDD	70		28 - 130				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,6,7,8-HxCDF	58		26 - 123				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,7,8,9-HxCDF	60		29 - 147				01/26/17 08:49	01/28/17 08:15	1
13C-2,3,4,6,7,8-HxCDF	61		28 - 136				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,4,6,7,8-HpCDD	74		23 - 140				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143				01/26/17 08:49	01/28/17 08:15	1
13C-1,2,3,4,7,8,9-HpCDF	69		26 - 138				01/26/17 08:49	01/28/17 08:15	1
13C-OCDD	83		17 - 157				01/26/17 08:49	01/28/17 08:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197				01/26/17 08:49	01/28/17 08:15	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000017	ug/L		01/26/17 08:49	01/30/17 16:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169				01/26/17 08:49	01/30/17 16:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197				01/26/17 08:49	01/30/17 16:33	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/01/17 17:00	02/02/17 16:26	1
Zinc	18	J,DX	20	10	ug/L		02/01/17 17:00	02/02/17 16:26	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/30/17 13:53	02/01/17 02:18	1
Copper	5.2		2.0	0.50	ug/L		01/30/17 13:53	02/01/17 02:18	1
Lead	4.6		1.0	0.50	ug/L		01/30/17 13:53	02/01/17 02:18	1
Antimony	0.56	J,DX	2.0	0.50	ug/L		01/30/17 13:53	02/01/17 02:18	1
Selenium	0.55	J,DX	2.0	0.50	ug/L		01/30/17 13:53	02/01/17 02:18	1
Thallium	ND		1.0	0.50	ug/L		01/30/17 13:53	02/01/17 02:18	1
Silver	ND		1.0	0.50	ug/L		01/30/17 13:53	02/01/17 02:18	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/25/17 12:31	01/26/17 13:32	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	150		10	5.0	mg/L			01/26/17 08:19	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:17	1

Client Sample ID: Outfall009_20170121_Comp_F

Lab Sample ID: 440-174237-2

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	QP	10	5.0	ug/L		01/31/17 14:03	02/01/17 18:25	1
Zinc	ND	QP	20	10	ug/L		01/31/17 14:03	02/01/17 18:25	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/31/17 13:56	02/01/17 19:55	1
Copper	3.3	QP	2.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:55	1
Lead	0.50	J,DX QP	1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:55	1
Antimony	0.55	J,DX QP	2.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:55	1
Selenium	ND	QP	2.0	0.50	ug/L		01/31/17 13:56	02/04/17 16:37	1
Thallium	ND	QP	1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:55	1
Silver	ND	QP	1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:55	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	LQ QP	0.20	0.10	ug/L		01/31/17 14:33	02/01/17 16:13	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			383774	01/23/17 10:34	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385505	01/31/17 13:32	NN	TAL IRV
Total/NA	Prep	1613B			962.3 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 08:15	SMA	TAL SAC
Total/NA	Prep	1613B	RA		962.3 mL	20 uL	147877	01/26/17 08:49	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 16:33	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	385848	02/01/17 17:00	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			386167	02/02/17 16:26	K1E	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	385233	01/30/17 13:53	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			385705	02/01/17 02:18	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384334	01/25/17 12:31	DB	TAL IRV
Total/NA	Analysis	245.1		1			384694	01/26/17 13:32	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384516	01/26/17 08:19	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	383875	01/23/17 14:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384201	01/24/17 19:17	SN	TAL IRV

Client Sample ID: Outfall009_20170121_Comp_F

Lab Sample ID: 440-174237-2

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385514	01/31/17 14:03	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			385871	02/01/17 18:25	K1E	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385511	01/31/17 13:56	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			385889	02/01/17 19:55	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385511	01/31/17 13:56	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386568	02/04/17 16:37	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	385307	01/30/17 16:59	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	385533	01/31/17 14:33	DB	TAL IRV
Dissolved	Analysis	245.1		1			385844	02/01/17 16:13	DB	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383774/4
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 10:09	1
Sulfate	ND		0.50	0.25	mg/L			01/23/17 10:09	1

Lab Sample ID: LCS 440-383774/2
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.82		mg/L		96	90 - 110
Sulfate	5.00	5.07		mg/L		101	90 - 110

Lab Sample ID: 440-174234-K-1 MS
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.8		5.00	8.08		mg/L		86	80 - 120
Sulfate	3.3		5.00	7.55		mg/L		85	80 - 120

Lab Sample ID: 440-174234-K-1 MSD
Matrix: Water
Analysis Batch: 383774

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.8		5.00	8.95		mg/L		104	80 - 120	10	20
Sulfate	3.3		5.00	8.52		mg/L		104	80 - 120	12	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,7,8-TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDD	0.00000279	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,6,7,8-HpCDF	0.00000117	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
1,2,3,4,7,8,9-HpCDF	0.000000630	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDD	0.0000230	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
OCDF	0.00000288	J,DX	0.00010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total TCDF	ND		0.000010	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDD	ND		0.000050	0.0000011	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total PeCDF	ND		0.000050	0.0000006	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDD	ND		0.000050	0.0000004	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HxCDF	ND		0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDD	0.00000700	J,DX q	0.000050	0.0000005	ug/L		01/26/17 08:49	01/27/17 20:13	1
Total HpCDF	0.00000180	J,DX q	0.000050	0.0000003	ug/L		01/26/17 08:49	01/27/17 20:13	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	68		25 - 164	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,7,8-TCDF	62		24 - 169	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDD	73		25 - 181	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8-PeCDF	63		24 - 185	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,7,8-PeCDF	70		21 - 178	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDD	76		32 - 141	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000197		ug/L		99	67 - 158
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	71		20 - 175
13C-2,3,7,8-TCDF	65		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	75		13 - 328
13C-1,2,3,4,7,8-HxCDD	77		21 - 193
13C-1,2,3,6,7,8-HxCDD	72		25 - 163
13C-1,2,3,4,7,8-HxCDF	67		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A

Matrix: Water

Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-385514/1-A

Matrix: Water

Analysis Batch: 385871

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 385514

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		01/31/17 14:03	02/01/17 18:14	1
Zinc	ND		20	10	ug/L		01/31/17 14:03	02/01/17 18:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-385514/2-A
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	500	486		ug/L		97	85 - 115
Zinc	500	456		ug/L		91	85 - 115
Silver	250	220		ug/L		88	85 - 115

Lab Sample ID: MB 440-385848/1-A
Matrix: Water
Analysis Batch: 386167

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385848

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/01/17 17:00	02/02/17 15:50	1
Zinc	ND		20	10	ug/L		02/01/17 17:00	02/02/17 15:50	1

Lab Sample ID: LCS 440-385848/2-A
Matrix: Water
Analysis Batch: 386167

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385848

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	500	511		ug/L		102	85 - 115
Zinc	500	492		ug/L		98	85 - 115
Silver	250	230		ug/L		92	85 - 115

Lab Sample ID: 440-174237-1 MS
Matrix: Water
Analysis Batch: 386167

Client Sample ID: Outfall009_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 385848

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		500	519		ug/L		104	70 - 130
Zinc	18	J,DX	500	522		ug/L		101	70 - 130
Silver	ND		250	233		ug/L		93	70 - 130

Lab Sample ID: 440-174237-1 MSD
Matrix: Water
Analysis Batch: 386167

Client Sample ID: Outfall009_20170121_Comp
Prep Type: Total Recoverable
Prep Batch: 385848

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		500	520		ug/L		104	70 - 130	0	20
Zinc	18	J,DX	500	521		ug/L		101	70 - 130	0	20
Silver	ND		250	232		ug/L		93	70 - 130	0	20

Lab Sample ID: 440-174236-C-2-G MS
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385514

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		500	489		ug/L		98	70 - 130
Zinc	ND		500	460		ug/L		92	70 - 130
Silver	ND		250	220		ug/L		88	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174236-C-2-H MSD
Matrix: Water
Analysis Batch: 385871

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385514

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Nickel	ND		500	485		ug/L		97	70 - 130	1	20
Zinc	ND		500	457		ug/L		91	70 - 130	1	20
Silver	ND		250	218		ug/L		87	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-385233/1-A
Matrix: Water
Analysis Batch: 385705

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385233

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		01/30/17 13:53	02/01/17 01:11	1
Copper	ND		2.0	0.50	ug/L		01/30/17 13:53	02/01/17 01:11	1
Lead	ND		1.0	0.50	ug/L		01/30/17 13:53	02/01/17 01:11	1
Antimony	ND		2.0	0.50	ug/L		01/30/17 13:53	02/01/17 01:11	1
Selenium	ND		2.0	0.50	ug/L		01/30/17 13:53	02/01/17 01:11	1
Thallium	ND		1.0	0.50	ug/L		01/30/17 13:53	02/01/17 01:11	1
Silver	ND		1.0	0.50	ug/L		01/30/17 13:53	02/01/17 01:11	1

Lab Sample ID: LCS 440-385233/2-A
Matrix: Water
Analysis Batch: 385705

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385233

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Cadmium	80.0	71.5		ug/L		89	85 - 115
Copper	80.0	72.1		ug/L		90	85 - 115
Lead	80.0	72.2		ug/L		90	85 - 115
Antimony	80.0	81.0		ug/L		101	85 - 115
Selenium	80.0	70.0		ug/L		87	85 - 115
Thallium	80.0	74.7		ug/L		93	85 - 115
Silver	80.0	71.6		ug/L		90	85 - 115

Lab Sample ID: 440-173920-F-1-C MS
Matrix: Water
Analysis Batch: 385705

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 385233

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier				Limits	
Cadmium	ND		80.0	70.3		ug/L		88	70 - 130	
Copper	1.6	J,DX	80.0	71.7		ug/L		88	70 - 130	
Lead	2.4		80.0	73.0		ug/L		88	70 - 130	
Antimony	0.87	J,DX	80.0	82.6		ug/L		102	70 - 130	
Selenium	ND		80.0	68.3		ug/L		85	70 - 130	
Thallium	ND		80.0	72.4		ug/L		90	70 - 130	
Silver	ND		80.0	70.7		ug/L		88	70 - 130	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-173920-F-1-D MSD
Matrix: Water
Analysis Batch: 385705

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 385233

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	72.9		ug/L		91	70 - 130	4	20
Copper	1.6	J,DX	80.0	74.3		ug/L		91	70 - 130	4	20
Lead	2.4		80.0	74.4		ug/L		90	70 - 130	2	20
Antimony	0.87	J,DX	80.0	84.4		ug/L		104	70 - 130	2	20
Selenium	ND		80.0	71.0		ug/L		89	70 - 130	4	20
Thallium	ND		80.0	74.0		ug/L		93	70 - 130	2	20
Silver	ND		80.0	72.7		ug/L		91	70 - 130	3	20

Lab Sample ID: MB 440-385307/1-D
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385511

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/31/17 13:56	02/01/17 19:50	1
Copper	ND		2.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Lead	ND		1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Antimony	ND		2.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Thallium	ND		1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1
Silver	ND		1.0	0.50	ug/L		01/31/17 13:56	02/01/17 19:50	1

Lab Sample ID: MB 440-385307/1-D
Matrix: Water
Analysis Batch: 386568

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385511

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		2.0	0.50	ug/L		01/31/17 13:56	02/04/17 16:33	1

Lab Sample ID: LCS 440-385307/2-D
Matrix: Water
Analysis Batch: 385889

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	68.7		ug/L		86	85 - 115
Copper	80.0	69.6		ug/L		87	85 - 115
Lead	80.0	69.3		ug/L		87	85 - 115
Antimony	80.0	77.3		ug/L		97	85 - 115
Thallium	80.0	69.6		ug/L		87	85 - 115
Silver	80.0	67.7		ug/L		85	85 - 115

Lab Sample ID: LCS 440-385307/2-D
Matrix: Water
Analysis Batch: 386568

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385511

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	80.0	69.6		ug/L		87	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174237-2 MS

Matrix: Water

Analysis Batch: 385889

Client Sample ID: Outfall009_20170121_Comp_F

Prep Type: Dissolved

Prep Batch: 385511

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Cadmium	ND	QP	80.0	68.2		ug/L		85	70 - 130	
Copper	3.3	QP	80.0	71.3		ug/L		85	70 - 130	
Lead	0.50	J,DX QP	80.0	68.6		ug/L		86	70 - 130	
Antimony	0.55	J,DX QP	80.0	78.6		ug/L		98	70 - 130	
Thallium	ND	QP	80.0	68.5		ug/L		86	70 - 130	
Silver	ND	QP	80.0	67.6		ug/L		84	70 - 130	

Lab Sample ID: 440-174237-2 MS

Matrix: Water

Analysis Batch: 386568

Client Sample ID: Outfall009_20170121_Comp_F

Prep Type: Dissolved

Prep Batch: 385511

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Selenium	ND	QP	80.0	72.2		ug/L		90	70 - 130	

Lab Sample ID: 440-174237-2 MSD

Matrix: Water

Analysis Batch: 385889

Client Sample ID: Outfall009_20170121_Comp_F

Prep Type: Dissolved

Prep Batch: 385511

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	69.5		ug/L		87	70 - 130	2	20
Copper	3.3	QP	80.0	73.3		ug/L		87	70 - 130	3	20
Lead	0.50	J,DX QP	80.0	67.4		ug/L		84	70 - 130	2	20
Antimony	0.55	J,DX QP	80.0	79.5		ug/L		99	70 - 130	1	20
Thallium	ND	QP	80.0	67.9		ug/L		85	70 - 130	1	20
Silver	ND	QP	80.0	68.4		ug/L		85	70 - 130	1	20

Lab Sample ID: 440-174237-2 MSD

Matrix: Water

Analysis Batch: 386568

Client Sample ID: Outfall009_20170121_Comp_F

Prep Type: Dissolved

Prep Batch: 385511

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Selenium	ND	QP	80.0	73.6		ug/L		92	70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384334/1-A

Matrix: Water

Analysis Batch: 384694

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 384334

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/25/17 12:31	01/26/17 13:00	1

Lab Sample ID: LCS 440-384334/2-A

Matrix: Water

Analysis Batch: 384694

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 384334

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	8.11		ug/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-174175-G-7-B MS
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384334

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.67		ug/L		108	70 - 130

Lab Sample ID: 440-174175-G-7-C MSD
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384334

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.23		ug/L		103	70 - 130	5	20

Lab Sample ID: MB 440-385307/1-E
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385533

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/31/17 14:33	02/01/17 15:55	1

Lab Sample ID: LCS 440-385307/2-E
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385533

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	9.35	LQ	ug/L		117	85 - 115

Lab Sample ID: 440-174236-C-2-J MS
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 385533

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	LQ QP	8.00	9.29		ug/L		116	70 - 130

Lab Sample ID: 440-174236-C-2-K MSD
Matrix: Water
Analysis Batch: 385844

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 385533

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	LQ QP	8.00	9.40		ug/L		117	70 - 130	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384516/1
Matrix: Water
Analysis Batch: 384516

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:19	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-384516/2
Matrix: Water
Analysis Batch: 384516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1030		mg/L		103	90 - 110

Lab Sample ID: 440-174324-A-1 DU
Matrix: Water
Analysis Batch: 384516

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	42		43.0		mg/L		2	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-383875/1-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 383875

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/23/17 14:51	01/24/17 19:16	1

Lab Sample ID: LCS 440-383875/2-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.4		ug/L		96	90 - 110

Lab Sample ID: LCSD 440-383875/3-A
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	93.3		ug/L		93	90 - 110	3	10

Lab Sample ID: 440-174110-D-1-B MS
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	98.3		ug/L		98	70 - 115

Lab Sample ID: 440-174110-D-1-C MSD
Matrix: Water
Analysis Batch: 384201

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 383875

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	100		ug/L		100	70 - 115	2	15

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

HPLC/IC

Analysis Batch: 383774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	300.0	
MB 440-383774/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383774/2	Lab Control Sample	Total/NA	Water	300.0	
440-174234-K-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-174234-K-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 385505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	1613B	
440-174237-1 - RA	Outfall009_20170121_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1 - RA	Outfall009_20170121_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	245.1	
MB 440-384334/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384334/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174175-G-7-B MS	Matrix Spike	Total/NA	Water	245.1	
440-174175-G-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 384694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	245.1	384334
MB 440-384334/1-A	Method Blank	Total/NA	Water	245.1	384334
LCS 440-384334/2-A	Lab Control Sample	Total/NA	Water	245.1	384334
440-174175-G-7-B MS	Matrix Spike	Total/NA	Water	245.1	384334

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Metals (Continued)

Analysis Batch: 384694 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174175-G-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	384334

Prep Batch: 385233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-385233/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385233/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-173920-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-173920-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Filtration Batch: 385307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	FILTRATION	
MB 440-385307/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-385307/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-385307/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174236-C-2-G MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174236-C-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174236-C-2-J MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174236-C-2-K MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-174237-2 MS	Outfall009_20170121_Comp_F	Dissolved	Water	FILTRATION	
440-174237-2 MSD	Outfall009_20170121_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 385511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	200.2	385307
MB 440-385307/1-D	Method Blank	Dissolved	Water	200.2	385307
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	200.2	385307
440-174237-2 MS	Outfall009_20170121_Comp_F	Dissolved	Water	200.2	385307
440-174237-2 MSD	Outfall009_20170121_Comp_F	Dissolved	Water	200.2	385307

Prep Batch: 385514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	200.2	385307
MB 440-385514/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385514/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174236-C-2-G MS	Matrix Spike	Dissolved	Water	200.2	385307
440-174236-C-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	385307

Prep Batch: 385533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	245.1	385307
MB 440-385307/1-E	Method Blank	Dissolved	Water	245.1	385307
LCS 440-385307/2-E	Lab Control Sample	Dissolved	Water	245.1	385307
440-174236-C-2-J MS	Matrix Spike	Dissolved	Water	245.1	385307
440-174236-C-2-K MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	385307

Analysis Batch: 385705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total Recoverable	Water	200.8	385233

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Metals (Continued)

Analysis Batch: 385705 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-385233/1-A	Method Blank	Total Recoverable	Water	200.8	385233
LCS 440-385233/2-A	Lab Control Sample	Total Recoverable	Water	200.8	385233
440-173920-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.8	385233
440-173920-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	385233

Analysis Batch: 385844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	245.1	385533
MB 440-385307/1-E	Method Blank	Dissolved	Water	245.1	385533
LCS 440-385307/2-E	Lab Control Sample	Dissolved	Water	245.1	385533
440-174236-C-2-J MS	Matrix Spike	Dissolved	Water	245.1	385533
440-174236-C-2-K MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	385533

Prep Batch: 385848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total Recoverable	Water	200.2	
MB 440-385848/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385848/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174237-1 MS	Outfall009_20170121_Comp	Total Recoverable	Water	200.2	
440-174237-1 MSD	Outfall009_20170121_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 385871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	200.7 Rev 4.4	385514
MB 440-385514/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385514
LCS 440-385514/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385514
440-174236-C-2-G MS	Matrix Spike	Dissolved	Water	200.7 Rev 4.4	385514
440-174236-C-2-H MSD	Matrix Spike Duplicate	Dissolved	Water	200.7 Rev 4.4	385514

Analysis Batch: 385889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	200.8	385511
MB 440-385307/1-D	Method Blank	Dissolved	Water	200.8	385511
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	200.8	385511
440-174237-2 MS	Outfall009_20170121_Comp_F	Dissolved	Water	200.8	385511
440-174237-2 MSD	Outfall009_20170121_Comp_F	Dissolved	Water	200.8	385511

Analysis Batch: 386167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	385848
MB 440-385848/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385848
LCS 440-385848/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385848
440-174237-1 MS	Outfall009_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	385848
440-174237-1 MSD	Outfall009_20170121_Comp	Total Recoverable	Water	200.7 Rev 4.4	385848

Analysis Batch: 386568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2	Outfall009_20170121_Comp_F	Dissolved	Water	200.8	385511
MB 440-385307/1-D	Method Blank	Dissolved	Water	200.8	385511
LCS 440-385307/2-D	Lab Control Sample	Dissolved	Water	200.8	385511
440-174237-2 MS	Outfall009_20170121_Comp_F	Dissolved	Water	200.8	385511

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Metals (Continued)

Analysis Batch: 386568 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-2 MSD	Outfall009_20170121_Comp_F	Dissolved	Water	200.8	385511

General Chemistry

Prep Batch: 383875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	Distill/CN	
MB 440-383875/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 384201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	SM 4500 CN E	383875
MB 440-383875/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	383875
LCS 440-383875/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	383875
LCSD 440-383875/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	383875
440-174110-D-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	383875

Analysis Batch: 384516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	SM 2540C	
MB 440-384516/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384516/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174324-A-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LQ	LCS/LCSD recovery above method control limits
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall09_20170121_Comp (440-174237-1)
DATE RECEIVED: 23 Jan - 17
ABC LAB NO.: TAM0117.184

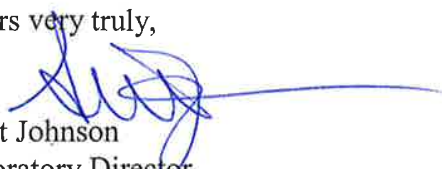
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = FAIL % EFFECT = 35.09 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 02 Feb-17 09:11 (p 1 of 1)
 Test Code: TAM0117.184sel | 09-4165-6706

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 11-5731-3078	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:22	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-1717-9619	Code: TAM0117.184sel	Client: Test America Irvine
Sample Date: 21 Jan-17 11:46	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:24	Source: Bioassay Report	
Sample Age: 51h (1.1 °C)	Station: Outfall09_20170121_Comp (440-174237-1)	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
02-4629-7634	Cell Density	TST-Welch's t Test	1.0000	100% failed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
02-4629-7634	Cell Density	Control CV	0.02809	<<	0.2	Yes	Passes Criteria
02-4629-7634	Cell Density	Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.398E+6	1.519E+6	1.458E+4	4.123E+4	2.81%	0.00%
100		8	9.529E+5	9.153E+5	9.904E+5	8.960E+5	1.024E+6	1.589E+4	4.494E+4	4.72%	35.09%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		9.540E+5	9.490E+5	1.024E+6	9.000E+5	1.003E+6	9.640E+5	8.960E+5	9.330E+5

CETIS Analytical Report

Report Date: 02 Feb-17 09:11 (p 1 of 2)
 Test Code: TAM0117.184sel | 09-4165-6706

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 02-4629-7634	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 02 Feb-17 9:10	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes	
Batch ID: 11-5731-3078	Test Type: Cell Growth	Analyst:	
Start Date: 23 Jan-17 14:22	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 27 Jan-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 18-1717-9619	Code: TAM0117.184sel	Client: Test America Irvine	
Sample Date: 21 Jan-17 11:46	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls	
Receipt Date: 23 Jan-17 11:24	Source: Bioassay Report		
Sample Age: 51h (1.1 °C)	Station: Outfall09_20170121_Comp (440-174237-1)		

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% failed cell density

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100	-7.68	0.6955	12	CDF	1.0000	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.02809	<<	0.2	Yes	Passes Criteria
Control Resp	1.47E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.061E+12	1.061E+12	1	570.7	<1.0E-37	Significant Effect
Error	2.604E+10	1.86E+09	14			
Total	1.087E+12		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.000983	8.862	0.9754	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.007366	8.862	0.9328	Equal Variances
Variances	Variance Ratio F Test	1.188	8.885	0.8262	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.1972	3.878	0.9349	Normal Distribution
Distribution	D'Agostino Skewness Test	0.1233	2.576	0.9018	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.09127	0.2471	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9728	0.8408	0.8818	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.468E+6	1.434E+6	1.502E+6	1.478E+6	1.398E+6	1.519E+6	1.458E+4	2.81%	0.00%
100		8	9.529E+5	9.153E+5	9.904E+5	9.515E+5	8.960E+5	1.024E+6	1.589E+4	4.72%	35.09%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.435E+6	1.519E+6	1.436E+6	1.398E+6	1.498E+6	1.474E+6	1.482E+6	1.502E+6
100		9.540E+5	9.490E+5	1.024E+6	9.000E+5	1.003E+6	9.640E+5	8.960E+5	9.330E+5

Selenastrum Growth Test

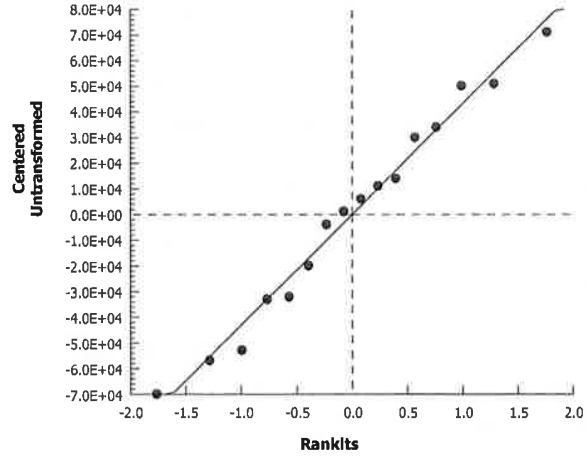
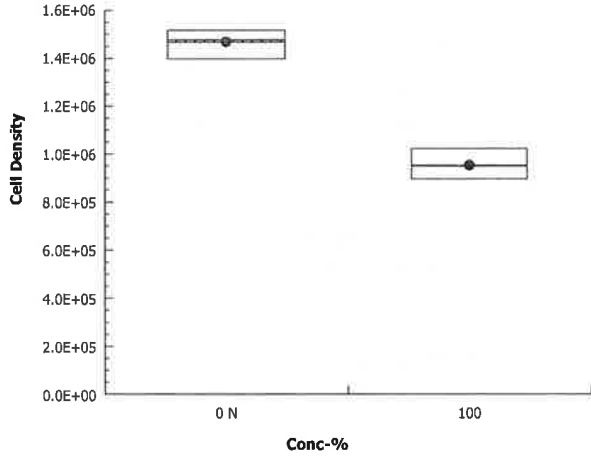
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 02-4629-7634
Analyzed: 02 Feb-17 9:10

Endpoint: Cell Density
Analysis: Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 02 Feb-17 09:11 (p 1 of 2)
 Test Code: TAM0117.184sel | 09-4165-6706

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 11-5731-3078	Test Type: Cell Growth	Analyst:
Start Date: 23 Jan-17 14:22	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 27 Jan-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 18-1717-9619	Code: TAM0117.184sel	Client: Test America Irvine
Sample Date: 21 Jan-17 11:46	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 23 Jan-17 11:24	Source: Bioassay Report	
Sample Age: 51h (1.1 °C)	Station: Outfall09_20170121_Comp (440-174237-1)	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	47			47	47	0	0	0.0%	0
Overall		2	58	-81.77	197.8	47	69	11	15.56	26.82%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	438	451.2	439	452	2.379	5.32	1.2%	0
100		5	182	177.6	186.4	178	187	1.581	3.536	1.94%	0
Overall		10	313.3	214.2	412.4	178	452	43.79	138.5	44.20%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	57			57	57	0	0	0.0%	0
Overall		2	77	-177.1	331.1	57	97	20	28.28	36.73%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.66	7.243	8.077	7.3	8.2	0.1503	0.3362	4.39%	0
Overall		10	7.59	7.41	7.77	7.3	8.2	0.07951	0.2514	3.31%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.22	23.9	24.54	24	24.5	0.1158	0.2588	1.07%	0
100		5	24.22	23.9	24.54	24	24.5	0.1158	0.2588	1.07%	0
Overall		10	24.22	24.05	24.39	24	24.5	0.07717	0.244	1.01%	0 (0%)

CETIS Measurement Report

Report Date: 02 Feb-17 09:11 (p 2 of 2)

Test Code: TAM0117.184sel | 09-4165-6706

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		47

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	447	452	439	440	445
100		178	180	181	184	187

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		57

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.7	7.4	7.4	7.5	7.6
100		8.2	7.5	7.3	7.6	7.7

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.5	24.5	24	24.1	24
100		24.5	24.5	24	24.1	24



CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

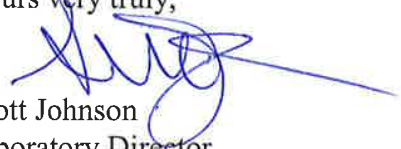
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:			
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab			
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

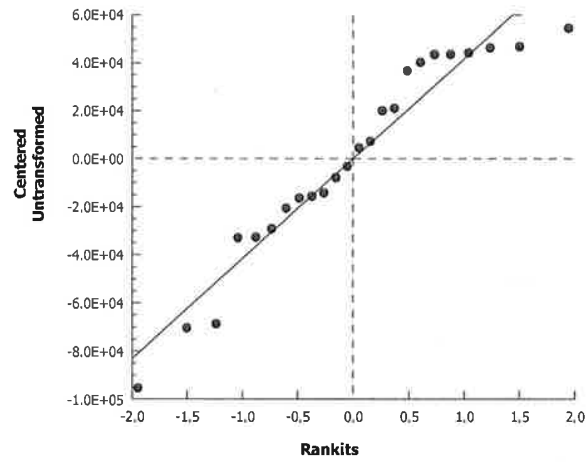
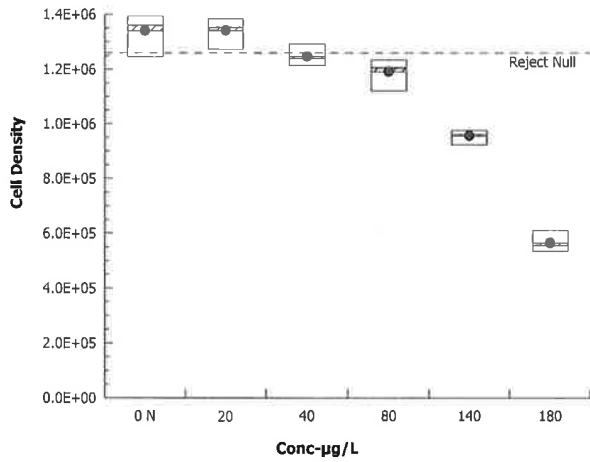
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



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 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record



estAmerica
 LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Patel, Urvashi	JC No: 40-106729.1
Client Contact: urvashi.patel@testamericainc.com		Phone: urvashi.patel@testamericainc.com	E-Mail: urvashi.patel@testamericainc.com	Page 1 of 1
Company: TestAmerica Laboratories, Inc.		State of Origin: California		
Address: 13715 Rider Trail North, Earth City, MO, 63045		Job # 440-174237-1		
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSC4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		
Project Name: Boeing NPDES SSFL outfalls		Special Instructions/Note: Boeing SSFL; DO NOT FILTER; use prep date from preservation		
Site:				
Sample Identification - Client ID (Lab ID)				
Outfall09_20170121_Comp (440-174237-1)	Sample Date: 1/21/17	Sample Time: 11:46 Pacific	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wastefl, BT=Tissue, AA=Air)
Due Date Requested: 2/2/2017		Analysis Requested		
TAT Requested (days):		Total Number of containers: 1		
PO #:		900.0/Evaporation Gross Alpha/Beta		
WO #:		901.1/Gs/Fill_Geo_K-40 and Cesium-137		
Project #:		903.0/PreSep_21 Radium-226		
SSOW#:		904.0/PreSep_0 Radium-228		
		905.0/PreSep_7 Strontium-90		
		906.0/LSC_Dist_Susp Tritium		
		A01.0/UR/ExChrom_Actin Total Uranium		
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		
Preservation Code:		Field Filtered Sample (Yes or No)		
Water		A01.0/UR/ExChrom_Actin Total Uranium		

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *V. B. B. B.* Date/Time: 1/23/17 17:00 Company: *FAI*
 Relinquished by: **FED EX** Date/Time: 1/23/17 17:00 Company: *FAI*
 Relinquished by: _____ Date/Time: _____ Company: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks:



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174237-1

Login Number: 174237

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174237-1

Login Number: 174237

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/25/17 11:54 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174237-1	Outfall009_20170121_Comp	69	61	73	63	71	73	70	63
440-174237-1 - RA	Outfall009_20170121_Comp		57						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174237-1	Outfall009_20170121_Comp	58	60	61	74	64	69	83	63
440-174237-1 - RA	Outfall009_20170121_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174237-1	Outfall009_20170121_Comp		58		60		61	74	
440-174237-1 - RA	Outfall009_20170121_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)		
440-174237-1	Outfall009_20170121_Comp		64		69		83		
440-174237-1 - RA	Outfall009_20170121_Comp								
MB 320-147877/1-A	Method Blank		69		78		96		

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174237-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 8, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174237-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170121_Comp	440-174237-1	N/A	Water	1/21/2017 03:15:00 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174237-2:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the laboratories' sample receipt checklists, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 18, 2016

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha detector efficiency was less than 20%; therefore, the nondetected result for gross alpha was qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of gross alpha. Gross alpha not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.



III.5.2. **FIELD DUPLICATES:**

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401742372

Analysis Method E900

Sample Name Outfall009_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:46:00 AM Validation Level: 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.01	1.04	1.35	1.35	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	3.67	0.907	0.949	0.949	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall009_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:46:00 AM Validation Level: 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-7.16	10.3	16.3	16.3	pCi/L	U	U	
Potassium-40	13966-00-2	-65.9	160	217	217	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:46:00 AM Validation Level: 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0910	0.252	0.475	0.475	pCi/L	U	U	

Analysis Method E904.0

Sample Name Outfall009_20170121_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 11:46:00 AM Validation Level: 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.478	0.449	0.720	0.720	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.102	0.304	0.529	0.529	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-29.7	159	291	291	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170121_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 11:46:00 AM **Validation Level:** 8

Lab Sample Name: 440-174237-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.243	0.536	0.905	0.905	pCi/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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TestAmerica Job ID: 440-174237-2

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/23/2017 10:56:08 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/23/2017 10:56:08 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174237-1	Outfall009_20170121_Comp	Water	01/21/17 15:15	01/22/17 16:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Job ID: 440-174237-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-174237-2**

Comments

No additional comments.

Receipt

The samples were received on 1/22/2017 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.1° C, 3.5° C and 3.9° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-292256:

The gross alpha matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the lower control limit of 60% (56% and 59%). Sample matrix interference is suspected because the associated gross alpha laboratory control sample (LCS) recovery is within acceptance limits. The data have been qualified and reported.

Outfall009_20170121_Comp (440-174237-1), (LCS 160-292256/2-A), (LCSB 160-292256/3-A), (MB 160-292256/1-A), (440-174317-Q-1-K), (440-174317-Q-1-L MS), (440-174317-Q-1-N MSB), (440-174317-Q-1-O MSB) and (440-174317-Q-1-M MSD)

Method(s) PrecSep-7: Strontium-90 Prep Batch 160-290301:

The following samples were prepared at a reduced sample volume due to excessive sediment and possible matrix interferences.

Outfall009_20170121_Comp (440-174237-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.01		1.02	1.04	3.00	1.35	pCi/L	02/14/17 10:22	02/20/17 21:38	1
Gross Beta	3.67		0.829	0.907	4.00	0.949	pCi/L	02/14/17 10:22	02/20/17 21:38	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-7.16	U	10.3	10.3	20.0	16.3	pCi/L	01/26/17 14:59	01/26/17 18:31	1
Potassium-40	-65.9	U	160	160		217	pCi/L	01/26/17 14:59	01/26/17 18:31	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0910	U	0.252	0.252	1.00	0.475	pCi/L	01/30/17 10:23	02/21/17 21:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	51.6		40 - 110					01/30/17 10:23	02/21/17 21:06	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.478	U	0.447	0.449	1.00	0.720	pCi/L	01/30/17 13:37	02/20/17 11:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	51.6		40 - 110					01/30/17 13:37	02/20/17 11:19	1
Y Carrier	82.6		40 - 110					01/30/17 13:37	02/20/17 11:19	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.102	U	0.304	0.304	3.00	0.529	pCi/L	01/31/17 11:55	02/13/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.5		40 - 110					01/31/17 11:55	02/13/17 17:08	1
Y Carrier	101		40 - 110					01/31/17 11:55	02/13/17 17:08	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-29.7	U	159	159	500	291	pCi/L	02/21/17 12:33	02/21/17 23:41	1

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.243	U	0.536	0.536	1.00	0.905	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	68.3		30 - 110					02/01/17 09:37	02/14/17 15:44	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Client Sample ID: Outfall009_20170121_Comp

Lab Sample ID: 440-174237-1

Date Collected: 01/21/17 15:15

Matrix: Water

Date Received: 01/22/17 16:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292256	02/14/17 10:22	MRB	TAL SL
Total/NA	Analysis	900.0		1			293387	02/20/17 21:38	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289225	01/26/17 18:31	KLS	TAL SL
Total/NA	Prep	PrecSep-21			999.59 mL	1.0 g	290058	01/30/17 10:23	AS	TAL SL
Total/NA	Analysis	903.0		1			293679	02/21/17 21:06	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.59 mL	1.0 g	290115	01/30/17 13:37	AS	TAL SL
Total/NA	Analysis	904.0		1			293387	02/20/17 11:19	RTM	TAL SL
Total/NA	Prep	PrecSep-7			459.03 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:08	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.1 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/21/17 23:41	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.08 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292518	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292256/1-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292256

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.9375		0.646	0.654	3.00	0.930	pCi/L	02/14/17 10:22	02/20/17 06:20	1
Gross Beta	0.7595	U	0.541	0.546	4.00	0.814	pCi/L	02/14/17 10:22	02/20/17 06:20	1

Lab Sample ID: LCS 160-292256/2-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.84		6.18	3.00	1.76	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-292256/3-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.1	88.28		9.35	4.00	0.832	pCi/L	97	75 - 125

Lab Sample ID: 440-174317-Q-1-L MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	1.10	U	49.9	28.11	F1	4.52	3.00	1.67	pCi/L	56	60 - 140

Lab Sample ID: 440-174317-Q-1-M MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	1.10	U	49.9	29.64	F1	4.89	3.00	1.70	pCi/L	59	60 - 140	0.16	1

Lab Sample ID: 440-174317-Q-1-N MSBT
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	3.67		91.1	89.43		9.48	4.00	1.08	pCi/L	94	60 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174317-Q-1-O MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	3.67		91.1	87.05		9.23	4.00	1.10	pCi/L	92	60 - 140	0.13	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-AK-1-B DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L	0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L	0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290058/1-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05389	U	0.113	0.113	1.00	0.282	pCi/L	01/30/17 10:23	02/21/17 20:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					01/30/17 10:23	02/21/17 20:55	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290058/2-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	7.329		1.04	1.00	0.310	pCi/L	122	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	84.1		40 - 110							

Lab Sample ID: 440-174317-F-1-C MS
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.177	U	6.01	7.673		1.11	1.00	0.362	pCi/L	128	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	86.4		40 - 110								

Lab Sample ID: 440-174317-F-1-D MSD
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.177	U	6.01	7.775		1.24	1.00	0.541	pCi/L	129	75 - 138	0.04	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	61.1		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290115/1-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290115

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1504	U	0.263	0.264	1.00	0.447	pCi/L	01/30/17 13:37	02/20/17 11:17	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	83.8		40 - 110							
Y Carrier	82.6		40 - 110							
								Prepared	Analyzed	Dil Fac
								01/30/17 13:37	02/20/17 11:17	1
								01/30/17 13:37	02/20/17 11:17	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-290115/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.70		1.82	1.00	0.428	pCi/L	121	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	84.1		40 - 110						
Y Carrier	81.5		40 - 110						

Lab Sample ID: 440-174317-F-1-E MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.179	U	13.8	15.35		1.68	1.00	0.426	pCi/L	111	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	86.4		40 - 110								
Y Carrier	84.1		40 - 110								

Lab Sample ID: 440-174317-F-1-F MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.179	U	13.8	17.08		1.95	1.00	0.616	pCi/L	123	45 - 150	0.48	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	61.1		40 - 110										
Y Carrier	83.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac			
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1			
MB MB													
Carrier	%Yield	Qualifier	Limits								Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110								01/31/17 11:55	02/13/17 15:14	1
Y Carrier	98.7		40 - 110								01/31/17 11:55	02/13/17 15:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-O-1-B MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-O-1-C MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
	Result	Qual		Result	Qual						Min	Max
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65	146
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68	143
Tracer		%Yield	Qualifier	MS MS		Limits						
Uranium-232		78.6				30 - 110						

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
	Result	Qual		Result	Qual						Min	Max	RER	Limit
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65	146	0.04	1
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68	143	0.29	1
Tracer		%Yield	Qualifier	MSD MSD		Limits								
Uranium-232		84.1				30 - 110								

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
	Result	Qual		Result	Qual						Min	Max
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65	146
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68	143
Tracer		%Yield	Qualifier	MS MS		Limits						
Uranium-232		78.6				30 - 110						

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
	Result	Qual		Result	Qual						Min	Max	RER	Limit
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65	146	0.22	1
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68	143	0.35	1
Tracer		%Yield	Qualifier	MSD MSD		Limits								
Uranium-232		86.7				30 - 110								

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-AK-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	PrecSep-21	
MB 160-290058/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290058/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174317-F-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-174317-F-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 290115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	PrecSep_0	
MB 160-290115/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290115/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174317-F-1-E MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-174317-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 292256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	Evaporation	
MB 160-292256/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292256/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292256/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174317-Q-1-L MS	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-174317-Q-1-N MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-174317-Q-1-O MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174237-1	Outfall009_20170121_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 DeRian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [003-007, 009, 010] Outfall 009 Comp						
Sampler: Bryan Deason		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)						
Sample Description	Sample I.D.	Sampling Date/Time	Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 009	Outfall009_20170121_Comp	1/21/2017	WM	500 mL Poly	1	HNO ₃	95	No
			WM	1 L Glass Amber	2	None	110	No
			WM	500 mL Poly	2	None	145	No
			WM	500 mL Poly	1	None	155	No
			WM	500 mL Poly	1	NaOH	220	No
			WM	2.5 Gal Cube	1	None	225	No
			WM	1 L Glass Amber	1	None	230	No
			WM	1 Gal Cube	6	None	235	No
			WM	borosilicate vials	12	HNO ₃	315	No
			WM	1L Poly	1	None	205	No
			WM	borosilicate vials	1	None	320	No
			WM	1 L Glass Amber	2	None	110	No
			WM	500 mL Poly	2	None	145	No

ANALYSIS REQUIRED

Total Recoverable Metals: Mercury (245.1)	
Total Dissolved Metals: Mercury (245.1)	
Cyanide	
Chronic Toxicity - Selenium	
CS-137 (901.0 or 901.1)	
Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, Tritium (1-3) (906.0), Sr-90 (905.0), Gross Beta (900.0), Gross Alpha (900.0)	X
Total Dissolved Metals: Cu, Pb, Ni, Ag, Sb, Tl, Cd, Se, Zn	
TDS	
CF, SO ₄ , NO ₃ +NO ₂ -N	X
TCDD (and all congeners)	
Total Recoverable Metals: Cu, Pb, Ni, Ag, Sb, Tl, Cd, Se, Zn	X

Comments

48 hours Holding Time NO3 & NO2

Unfiltered and unpreserved analysis. Separate RAD onto another worksheet.

Only test if first or second rain events of the year

Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.

Filter and preserve w/in 24hrs of receipt at lab

Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.

Hold

Hold

Store all sample ON COC for 6 months

Turn-around time: (Check)
 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:

Sample Integrity: (Check)
 Intact: On Ice:

Data Requirements: (Check)
 No Level IV: All Level IV:

Received By: [Signature] Date/Time: 1/21/17 15:00
Received By: [Signature] Date/Time: 1/21/17 15:00
Received By: [Signature] Date/Time: 1/21/17 15:00

Relinquished By: [Signature] Date/Time: 1/21/17 15:00
Relinquished By: [Signature] Date/Time: 1/21/17 15:00
Relinquished By: [Signature] Date/Time: 1/21/17 15:00

TO WALK IN FRIDGE 1/21/17 15:00
 FROM WALK IN FRIDGE 1/22/17 4:15 PM
 3.0/3.1
 3.4/3.1
 3.8/3.5 SK SUC



440-174237 Chain of Custody



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174237-2

Login Number: 174237

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174237-2

Login Number: 174237

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/24/17 03:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0,19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)							
440-174237-1	Outfall009_20170121_Comp	51.6							
440-174317-F-1-C MS	Matrix Spike	86.4							
440-174317-F-1-D MSD	Matrix Spike Duplicate	61.1							
LCS 160-290058/2-A	Lab Control Sample	84.1							
MB 160-290058/1-A	Method Blank	83.8							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)						
440-174237-1	Outfall009_20170121_Comp	51.6	82.6						
440-174317-F-1-E MS	Matrix Spike	86.4	84.1						
440-174317-F-1-F MSD	Matrix Spike Duplicate	61.1	83.0						
LCS 160-290115/2-A	Lab Control Sample	84.1	81.5						
MB 160-290115/1-A	Method Blank	83.8	82.6						

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)						
440-174110-G-1-E MS	Matrix Spike	84.4	98.3						
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9						
440-174237-1	Outfall009_20170121_Comp	83.5	101						
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7						
MB 160-290301/1-A	Method Blank	84.3	98.7						

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)							
440-174110-F-1-E MS	Matrix Spike	78.6							
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1							
440-174237-1	Outfall009_20170121_Comp	68.3							

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-174237-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175635-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 4, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175635-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170204_ Grab	440-175635-1	N/A	Water	2/4/2017 10:15:00 AM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-175635-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 1664 — HEXANE EXTRACTABLE MATERIALS (OIL AND GREASE)

Marcia Hilchey of MEC^X reviewed the SDG on March 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401756351

Analysis Method *E1664*

Sample Name Outfall009_20170204_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 10:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175635-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREASEND	5.4	1.5	mg/L	U	U		

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175635-1

Client Project/Site: Routine Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/19/2017 3:05:34 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

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The
Expert**

Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/19/2017 3:05:34 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175635-1	Outfall009_20170204_Grab	Water	02/04/17 10:15	02/04/17 12:30

1

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Job ID: 440-175635-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175635-1

Comments

No additional comments.

Receipt

The samples were received on 2/4/2017 12:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-387812 and analytical batch 440-387846. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Client Sample ID: Outfall009_20170204_Grab

Lab Sample ID: 440-175635-1

Date Collected: 02/04/17 10:15

Matrix: Water

Date Received: 02/04/17 12:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.4	1.5	mg/L		02/11/17 09:18	02/11/17 13:12	1

- 1
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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Client Sample ID: Outfall009_20170204_Grab

Lab Sample ID: 440-175635-1

Date Collected: 02/04/17 10:15

Matrix: Water

Date Received: 02/04/17 12:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			920 mL	1000 mL	387812	02/11/17 09:18	L2A	TAL IRV
Total/NA	Analysis	1664A		1			387846	02/11/17 13:12	L2A	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-387812/1-A
Matrix: Water
Analysis Batch: 387846

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387812

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/11/17 09:18	02/11/17 13:12	1

Lab Sample ID: LCS 440-387812/2-A
Matrix: Water
Analysis Batch: 387846

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387812

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	37.1		mg/L		93	78 - 114

Lab Sample ID: LCSD 440-387812/3-A
Matrix: Water
Analysis Batch: 387846

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387812

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	35.3		mg/L		88	78 - 114	5	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

General Chemistry

Prep Batch: 387812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175635-1	Outfall009_20170204_Grab	Total/NA	Water	1664A	
MB 440-387812/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-387812/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-387812/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 387846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175635-1	Outfall009_20170204_Grab	Total/NA	Water	1664A	387812
MB 440-387812/1-A	Method Blank	Total/NA	Water	1664A	387812
LCS 440-387812/2-A	Lab Control Sample	Total/NA	Water	1664A	387812
LCSD 440-387812/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	387812

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-175635-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175635-1

Login Number: 175635

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175636-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 29, 2017

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175636-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170205_Comp	440-175636-1	N/A	Water	2/5/17 8:00 AM	E1613B, E200.8, E245.1, E300, SM2540C, SM4500- CN-E
Outfall009_20170205_Comp_F	440-175636-2	N/A	Water	2/5/17 8:00 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175636-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

The following issues were noted:

- The correction on the original COC was not initialed and dated.
- The collection times were not documented on the COC. The laboratory logged the samples per the collection times on the container labels.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was listed on the COC for sample Outfall009_20170205_Comp. The laboratory case narrative notes that the chronic toxicity sample was not received. The chronic toxicity subcontracted analysis was not reported.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDD and 2,3,7,8-TCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, HpCDF, and HxCDF in the method blank were the same peaks comprising the totals in sample Outfall009_20170205_Comp. The results for totals HpCDD, HpCDF, and HxCDF were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total results in the sample included more peaks than the method blank



totals. The sample results for totals HxCDD and TCDF were therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Totals HxCDD and TCDF containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8 AND 245.1— METALS AND MERCURY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 6, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met. The sample for dissolved metals analysis was filtered the day after laboratory receipt.

IV.2. MS TUNING AND CALIBRATION

The mass calibration for the total metals sample analysis run was within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$. The tune report is missing from the raw data for the dissolved sample analytical run.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y -intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

The CRQL standard analysis raw data is missing for the dissolved sample 200.8 analysis run.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

It should be noted that for the 200.8 dissolved sample analytical run, the ICB, bracketing CCB and method blank analysis raw data is missing from the package.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

It should be noted that the ICSA analysis raw data is missing for the dissolved sample analytical run.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on dissolved sample Outfall009_20170205_Comp_F for all methods. MS/MSD analyses were not performed on total sample Outfall009_20170205_Comp. Results were not



assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 300.0, *Standard Methods for the Examination of Water and Wastewater 2540C and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate
- 48 hours for nitrate and nitrite as N



V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.

V.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No raw data was presented in the SDG for the TDS analysis.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401756361

Analysis Method E1613B

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000012	0.000099	0.00000016	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000064	0.000099	0.00000022	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000053	0.000050	0.00000017	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000013	0.000050	0.00000025	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000050	0.00000020	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000022	0.000050	0.00000013	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000050	0.00000018	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000050	0.00000013	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	ND	0.000050	0.00000018	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000050	0.00000011	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000050	0.00000015	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000050	0.00000013	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000050	0.00000029	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000050	0.00000011	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000050	0.00000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000052	0.000099	0.00000012	ug/L	J,DXqMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000099	0.0000027	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000099	0.00000023	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.00000053	0.000050	0.00000019	ug/L	J,DXqMB	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000026	0.000050	0.00000025	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.00000022	0.000050	0.00000012	ug/L	J,DXqMB	U	B
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000030	0.000050	0.00000017	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000050	0.00000013	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000050	0.00000029	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000091	0.0000099	0.00000012	ug/L	J,DXqMB	J	B, DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000099	0.00000023	ug/L	U	U	

Analysis Method E200.8

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.74	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.6	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall009_20170205_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.74	2.0	0.50	ug/L	J,DXQP	J	DNQ
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	4.4	2.0	0.50	ug/L	QP		
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	U	
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	U	
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	U	

Analysis Method E245.1

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall009_20170205_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2017 8:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175636-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	U	

Analysis Method E300**Sample Name** Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2017 8:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	14	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	2.2	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	12	0.50	0.25	mg/L			

Analysis Method SM2540C**Sample Name** Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2017 8:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	120	10	5.0	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/5/2017 8:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175636-1

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/4/2017 9:35:57 PM

Urvashi Patel, Manager of Project Management

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LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/4/2017 9:35:57 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175636-1	Outfall009_20170205_Comp	Water	02/05/17 08:00	02/05/17 10:30
440-175636-2	Outfall009_20170205_Comp_F	Water	02/05/17 08:00	02/05/17 10:30

- 1
- 2
- 3
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- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Job ID: 440-175636-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175636-1

Comments

No additional comments.

Receipt

The samples were received on 2/5/2017 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.3° C, 1.3° C, 1.5° C and 1.6° C.

Receipt Exceptions

The following samples was listed on the Chain of Custody (COC); however, no samples was received:
We did not received the 6-1 gal for Chronic Selenustrum to ABC laboratories.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Chloride and/or Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-386603 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		0.50	0.25	mg/L			02/05/17 15:58	1
Sulfate	12		0.50	0.25	mg/L			02/05/17 15:58	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.2		0.15	0.070	mg/L			02/17/17 12:42	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000099	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,4,7,8-HxCDF	0.0000022	J,DX q MB	0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,4,6,7,8-HpCDD	0.0000013	J,DX MB	0.000050	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,4,6,7,8-HpCDF	0.0000053	J,DX q MB	0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
OCDD	0.0000064	J,DX MB	0.000099	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
OCDF	0.0000012	J,DX MB	0.000099	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total TCDD	ND		0.0000099	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total TCDF	0.0000091	J,DX q MB	0.000099	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total PeCDD	ND		0.000050	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total PeCDF	ND		0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total HxCDD	0.0000030	J,DX q MB	0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total HxCDF	0.0000022	J,DX q MB	0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
Total HpCDD	0.0000026	J,DX MB	0.000050	0.0000002	ug/L		02/09/17 08:31	02/11/17 09:17	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	0.0000053	J,DX q MB	0.000050	0.0000001	ug/L		02/09/17 08:31	02/11/17 09:17	1
9									
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDD	66		25 - 164				02/09/17 08:31	02/11/17 09:17	1
13C-2,3,7,8-TCDF	61		24 - 169				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,7,8-PeCDD	77		25 - 181				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,7,8-PeCDF	68		24 - 185				02/09/17 08:31	02/11/17 09:17	1
13C-2,3,4,7,8-PeCDF	75		21 - 178				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,4,7,8-HxCDD	74		32 - 141				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,6,7,8-HxCDD	78		28 - 130				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,4,7,8-HxCDF	71		26 - 152				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147				02/09/17 08:31	02/11/17 09:17	1
13C-2,3,4,6,7,8-HxCDF	71		28 - 136				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,4,6,7,8-HpCDD	88		23 - 140				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,4,6,7,8-HpCDF	86		28 - 143				02/09/17 08:31	02/11/17 09:17	1
13C-1,2,3,4,7,8,9-HpCDF	93		26 - 138				02/09/17 08:31	02/11/17 09:17	1
13C-OCDD	96		17 - 157				02/09/17 08:31	02/11/17 09:17	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD	84		35 - 197				02/09/17 08:31	02/11/17 09:17	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000099	0.0000027	ug/L		02/09/17 08:31	02/16/17 01:25	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDF	67		24 - 169				02/09/17 08:31	02/16/17 01:25	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
37Cl4-2,3,7,8-TCDD	83		35 - 197				02/09/17 08:31	02/16/17 01:25	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/13/17 08:20	02/13/17 22:20	1
Copper	3.6		2.0	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1
Lead	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1
Antimony	0.74	J,DX	2.0	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1
Selenium	ND		2.0	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1
Thallium	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1
Silver	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 17:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	120		10	5.0	mg/L			02/10/17 11:48	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/09/17 15:59	02/13/17 17:49	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Client Sample ID: Outfall009_20170205_Comp_F

Lab Sample ID: 440-175636-2

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	1.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1
Cadmium	ND	QP	1.0	0.25	ug/L		02/13/17 09:18	02/13/17 15:57	1
Copper	4.4	QP	2.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1
Lead	ND	QP	1.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1
Antimony	0.74	J,DX QP	2.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1
Selenium	ND	QP	2.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1
Thallium	ND	QP	1.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/13/17 22:40	02/14/17 19:09	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			386603	02/05/17 15:58	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			388939	02/17/17 12:42	TLN	TAL IRV
Total/NA	Prep	1613B			1008.6 mL	20 uL	149753	02/09/17 08:31	DXD	TAL SAC
Total/NA	Analysis	1613B		1			150147	02/11/17 09:17	SMA	TAL SAC
Total/NA	Prep	1613B	RA		1008.6 mL	20 uL	149753	02/09/17 08:31	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			150794	02/16/17 01:25	JRB	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	387948	02/13/17 08:20	EN	TAL IRV
Total Recoverable	Analysis	200.8		1			388144	02/13/17 22:20	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388098	02/13/17 22:08	DB	TAL IRV
Total/NA	Analysis	245.1		1			388283	02/14/17 17:08	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	387682	02/10/17 11:48	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387501	02/09/17 15:59	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388079	02/13/17 17:49	SN	TAL IRV

Client Sample ID: Outfall009_20170205_Comp_F

Lab Sample ID: 440-175636-2

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	386755	02/06/17 15:05	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	387966	02/13/17 09:18	EN	TAL IRV
Dissolved	Analysis	200.8		1			388152	02/13/17 15:57	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	386755	02/06/17 15:05	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	388109	02/13/17 22:40	DB	TAL IRV
Dissolved	Analysis	245.1		1			388551	02/14/17 19:09	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-386603/5
Matrix: Water
Analysis Batch: 386603

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/05/17 10:46	1
Sulfate	ND		0.50	0.25	mg/L			02/05/17 10:46	1

Lab Sample ID: LCS 440-386603/4
Matrix: Water
Analysis Batch: 386603

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.74		mg/L		95	90 - 110
Fluoride	5.00	4.56		mg/L		91	90 - 110
Sulfate	5.00	4.88		mg/L		98	90 - 110

Lab Sample ID: 440-175577-B-17 MS
Matrix: Water
Analysis Batch: 386603

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	1.4		5.00	5.68		mg/L		86	80 - 120

Lab Sample ID: 440-175577-B-17 MSD
Matrix: Water
Analysis Batch: 386603

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	1.4		5.00	5.84		mg/L		90	80 - 120	3	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-149753/1-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 149753

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8-PeCDD	0.00000129	J,DX q	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8-PeCDF	0.00000123	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
2,3,4,7,8-PeCDF	0.00000129	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,4,7,8-HxCDD	0.00000139	J,DX q	0.000050	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,6,7,8-HxCDD	0.00000159	J,DX	0.000050	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,7,8,9-HxCDD	0.00000154	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,4,7,8-HxCDF	0.00000134	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
1,2,3,6,7,8-HxCDF	0.00000131	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-149753/1-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 149753

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	0.00000161	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				5					
2,3,4,6,7,8-HxCDF	0.00000173	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				6					
1,2,3,4,6,7,8-HpCDD	0.00000204	J,DX	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
				5					
1,2,3,4,6,7,8-HpCDF	0.00000178	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				6					
1,2,3,4,7,8,9-HpCDF	0.00000158	J,DX	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				9					
OCDD	0.00000584	J,DX	0.00010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
				7					
OCDF	0.00000319	J,DX q	0.00010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
				4					
Total TCDD	0.000000267	J,DX q	0.000010	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
				5					
Total TCDF	0.00000102	J,DX	0.000010	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				4					
Total PeCDD	0.00000129	J,DX q	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
				4					
Total PeCDF	0.00000252	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				7					
Total HxCDD	0.00000452	J,DX q	0.000050	0.0000002	ug/L		02/09/17 08:31	02/10/17 22:47	1
				0					
Total HxCDF	0.00000599	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				8					
Total HpCDD	0.00000302	J,DX	0.000050	0.0000003	ug/L		02/09/17 08:31	02/10/17 22:47	1
				5					
Total HpCDF	0.00000336	J,DX q	0.000050	0.0000001	ug/L		02/09/17 08:31	02/10/17 22:47	1
				8					

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	65		25 - 164	02/09/17 08:31	02/10/17 22:47	1
13C-2,3,7,8-TCDF	60		24 - 169	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,7,8-PeCDD	74		25 - 181	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,7,8-PeCDF	64		24 - 185	02/09/17 08:31	02/10/17 22:47	1
13C-2,3,4,7,8-PeCDF	73		21 - 178	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,7,8-HxCDD	69		32 - 141	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,6,7,8-HxCDD	71		28 - 130	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,7,8-HxCDF	64		26 - 152	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,7,8,9-HxCDF	61		29 - 147	02/09/17 08:31	02/10/17 22:47	1
13C-2,3,4,6,7,8-HxCDF	65		28 - 136	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,6,7,8-HpCDD	77		23 - 140	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,6,7,8-HpCDF	76		28 - 143	02/09/17 08:31	02/10/17 22:47	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138	02/09/17 08:31	02/10/17 22:47	1
13C-OCDD	80		17 - 157	02/09/17 08:31	02/10/17 22:47	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	02/09/17 08:31	02/10/17 22:47	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-149753/2-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 149753

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000184		ug/L		92	67 - 158
2,3,7,8-TCDF	0.000200	0.000196	MB	ug/L		98	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000926	MB	ug/L		93	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000927	MB	ug/L		93	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000869	MB	ug/L		87	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000814	MB	ug/L		81	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000864	MB	ug/L		86	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000832	MB	ug/L		83	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000874	MB	ug/L		87	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000898	MB	ug/L		90	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000897	MB	ug/L		90	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000916	MB	ug/L		92	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000920	MB	ug/L		92	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000856	MB	ug/L		86	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000813	MB	ug/L		81	78 - 138
OCDD	0.00200	0.00174	MB	ug/L		87	78 - 144
OCDF	0.00200	0.00178	MB	ug/L		89	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	65		20 - 175
13C-2,3,7,8-TCDF	62		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDF	61		21 - 159
13C-1,2,3,7,8,9-HxCDF	60		17 - 205
13C-2,3,4,6,7,8-HxCDF	64		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	74		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	80		20 - 186
13C-OCDD	77		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	89		31 - 191

Lab Sample ID: LCSD 320-149753/3-A
Matrix: Water
Analysis Batch: 150146

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 149753

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000206		ug/L		103	67 - 158	11	50
2,3,7,8-TCDF	0.000200	0.000204	MB	ug/L		102	75 - 158	4	50
1,2,3,7,8-PeCDD	0.00100	0.00103	MB	ug/L		103	70 - 142	11	50
1,2,3,7,8-PeCDF	0.00100	0.00101	MB	ug/L		101	80 - 134	9	50
2,3,4,7,8-PeCDF	0.00100	0.000979	MB	ug/L		98	68 - 160	12	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-149753/3-A

Matrix: Water

Analysis Batch: 150146

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 149753

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000983	MB	ug/L		98	70 - 164	19	50
1,2,3,6,7,8-HxCDD	0.00100	0.000973	MB	ug/L		97	76 - 134	12	50
1,2,3,7,8,9-HxCDD	0.00100	0.000987	MB	ug/L		99	64 - 162	17	50
1,2,3,4,7,8-HxCDF	0.00100	0.000983	MB	ug/L		98	72 - 134	12	50
1,2,3,6,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	84 - 130	12	50
1,2,3,7,8,9-HxCDF	0.00100	0.00104	MB	ug/L		104	78 - 130	15	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103	MB	ug/L		103	70 - 156	12	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00105	MB	ug/L		105	70 - 140	13	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000952	MB	ug/L		95	82 - 122	11	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000927	MB	ug/L		93	78 - 138	13	50
OCDD	0.00200	0.00195	MB	ug/L		97	78 - 144	11	50
OCDF	0.00200	0.00203	MB	ug/L		102	63 - 170	13	50

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	67		20 - 175
13C-2,3,7,8-TCDF	66		22 - 152
13C-1,2,3,7,8-PeCDD	80		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	77		13 - 328
13C-1,2,3,4,7,8-HxCDD	70		21 - 193
13C-1,2,3,6,7,8-HxCDD	74		25 - 163
13C-1,2,3,4,7,8-HxCDF	66		19 - 202
13C-1,2,3,6,7,8-HxCDF	64		21 - 159
13C-1,2,3,7,8,9-HxCDF	64		17 - 205
13C-2,3,4,6,7,8-HxCDF	68		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	79		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	82		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	87		20 - 186
13C-OCDD	84		13 - 199

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	92		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-149753/1-A

Matrix: Water

Analysis Batch: 150794

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 149753

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000036	ug/L		02/09/17 08:31	02/15/17 21:00	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDF - RA	59		24 - 169	02/09/17 08:31	02/15/17 21:00	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD - RA	83		35 - 197	02/09/17 08:31	02/15/17 21:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-387948/1-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Cadmium	ND		1.0	0.25	ug/L		02/13/17 08:20	02/13/17 21:41		1
Copper	ND		2.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:41		1
Lead	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:41		1
Antimony	ND		2.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:41		1
Selenium	ND		2.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:41		1
Thallium	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:41		1
Silver	ND		1.0	0.50	ug/L		02/13/17 08:20	02/13/17 21:41		1

Lab Sample ID: LCS 440-387948/2-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	78.7		ug/L		98	85 - 115
Copper	80.0	81.5		ug/L		102	85 - 115
Lead	80.0	79.8		ug/L		100	85 - 115
Antimony	80.0	79.4		ug/L		99	85 - 115
Selenium	80.0	80.0		ug/L		100	85 - 115
Thallium	80.0	82.0		ug/L		102	85 - 115
Silver	80.0	77.9		ug/L		97	85 - 115

Lab Sample ID: 440-175633-A-1-E MS
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	78.9		ug/L		99	70 - 130
Copper	1.3	J,DX	80.0	81.4		ug/L		100	70 - 130
Lead	ND		80.0	83.3		ug/L		104	70 - 130
Antimony	ND		80.0	82.8		ug/L		103	70 - 130
Selenium	0.50	J,DX	80.0	83.0		ug/L		103	70 - 130
Thallium	ND		80.0	82.8		ug/L		104	70 - 130
Silver	ND		80.0	77.4		ug/L		97	70 - 130

Lab Sample ID: 440-175633-A-1-F MSD
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Cadmium	ND		80.0	77.7	BA	ug/L		97	70 - 130	200	20
Copper	1.3	J,DX	80.0	79.0	BA	ug/L		97	70 - 130	200	20
Lead	ND		80.0	79.4	BA	ug/L		99	70 - 130	200	20
Antimony	ND		80.0	82.0	BA	ug/L		102	70 - 130	200	20
Selenium	0.50	J,DX	80.0	79.7	BA	ug/L		99	70 - 130	200	20
Thallium	ND		80.0	80.3	BA	ug/L		100	70 - 130	200	20
Silver	ND		80.0	76.9	BA	ug/L		96	70 - 130	200	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-386755/1-E
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 387966

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Cadmium	ND		1.0	0.25	ug/L		02/13/17 09:18	02/13/17 15:54	1	
Copper	ND		2.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1	
Lead	ND		1.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1	
Antimony	ND		2.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1	
Selenium	ND		2.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1	
Thallium	ND		1.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1	
Silver	ND		1.0	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1	

Lab Sample ID: LCS 440-386755/2-E
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 387966

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	72.6		ug/L		91	85 - 115
Copper	80.0	74.4		ug/L		93	85 - 115
Lead	80.0	72.5		ug/L		91	85 - 115
Antimony	80.0	80.7		ug/L		101	85 - 115
Selenium	80.0	73.6		ug/L		92	85 - 115
Thallium	80.0	76.4		ug/L		95	85 - 115
Silver	80.0	72.6		ug/L		91	85 - 115

Lab Sample ID: 440-175636-2 MS
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Outfall009_20170205_Comp_F
Prep Type: Dissolved
Prep Batch: 387966

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND	QP	80.0	71.6		ug/L		90	70 - 130
Copper	4.4	QP	80.0	76.9		ug/L		91	70 - 130
Lead	ND	QP	80.0	72.4		ug/L		90	70 - 130
Antimony	0.74	J,DX QP	80.0	83.1		ug/L		103	70 - 130
Selenium	ND	QP	80.0	72.5		ug/L		91	70 - 130
Thallium	ND	QP	80.0	76.5		ug/L		96	70 - 130
Silver	ND	QP	80.0	71.9		ug/L		90	70 - 130

Lab Sample ID: 440-175636-2 MSD
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Outfall009_20170205_Comp_F
Prep Type: Dissolved
Prep Batch: 387966

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND	QP	80.0	72.4		ug/L		90	70 - 130	1	20
Copper	4.4	QP	80.0	77.6		ug/L		91	70 - 130	1	20
Lead	ND	QP	80.0	74.4		ug/L		93	70 - 130	3	20
Antimony	0.74	J,DX QP	80.0	83.4		ug/L		103	70 - 130	0	20
Selenium	ND	QP	80.0	73.5		ug/L		92	70 - 130	1	20
Thallium	ND	QP	80.0	77.3		ug/L		97	70 - 130	1	20
Silver	ND	QP	80.0	73.3		ug/L		92	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388098/1-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388098

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 16:36	1

Lab Sample ID: LCS 440-388098/2-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.73		ug/L		97	85 - 115

Lab Sample ID: 440-176655-A-1-B MS
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.79		ug/L		97	70 - 130

Lab Sample ID: 440-176655-A-1-C MSD
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.73		ug/L		97	70 - 130	1	20

Lab Sample ID: MB 440-386755/1-F
Matrix: Water
Analysis Batch: 388551

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388109

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:40	02/14/17 18:55	1

Lab Sample ID: LCS 440-386755/2-F
Matrix: Water
Analysis Batch: 388551

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388109

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.26		ug/L		103	85 - 115

Lab Sample ID: 440-175636-2 MS
Matrix: Water
Analysis Batch: 388551

Client Sample ID: Outfall009_20170205_Comp_F
Prep Type: Dissolved
Prep Batch: 388109

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.10		ug/L		101	70 - 130

Lab Sample ID: 440-175636-2 MSD
Matrix: Water
Analysis Batch: 388551

Client Sample ID: Outfall009_20170205_Comp_F
Prep Type: Dissolved
Prep Batch: 388109

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.19		ug/L		102	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-387682/1
Matrix: Water
Analysis Batch: 387682

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/10/17 11:48	1

Lab Sample ID: LCS 440-387682/2
Matrix: Water
Analysis Batch: 387682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	952		mg/L		95	90 - 110

Lab Sample ID: 440-176243-B-6 DU
Matrix: Water
Analysis Batch: 387682

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	1500		1430		mg/L		2	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387501/1-A
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387501

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/09/17 15:59	02/13/17 17:48	1

Lab Sample ID: LCS 440-387501/2-A
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387501

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	106		ug/L		106	90 - 110

Lab Sample ID: 440-175840-E-1-B MS
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387501

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	96.9		ug/L		97	70 - 115

Lab Sample ID: 440-175840-E-1-C MSD
Matrix: Water
Analysis Batch: 388079

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387501

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.5		ug/L		100	70 - 115	3	15

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

HPLC/IC

Analysis Batch: 386603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	300.0	
MB 440-386603/5	Method Blank	Total/NA	Water	300.0	
LCS 440-386603/4	Lab Control Sample	Total/NA	Water	300.0	
440-175577-B-17 MS	Matrix Spike	Total/NA	Water	300.0	
440-175577-B-17 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 388939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 149753

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	1613B	
440-175636-1 - RA	Outfall009_20170205_Comp	Total/NA	Water	1613B	
MB 320-149753/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-149753/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-149753/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-149753/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 150146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-149753/1-A	Method Blank	Total/NA	Water	1613B	149753
LCS 320-149753/2-A	Lab Control Sample	Total/NA	Water	1613B	149753
LCS 320-149753/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	149753

Analysis Batch: 150147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	1613B	149753

Analysis Batch: 150794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1 - RA	Outfall009_20170205_Comp	Total/NA	Water	1613B	149753
MB 320-149753/1-A - RA	Method Blank	Total/NA	Water	1613B	149753

Metals

Filtration Batch: 386755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	FILTRATION	
MB 440-386755/1-E	Method Blank	Dissolved	Water	FILTRATION	
MB 440-386755/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-386755/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-386755/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	FILTRATION	
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Metals (Continued)

Prep Batch: 387948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total Recoverable	Water	200.2	
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175633-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-175633-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 387966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	200.2	386755
MB 440-386755/1-E	Method Blank	Dissolved	Water	200.2	386755
LCS 440-386755/2-E	Lab Control Sample	Dissolved	Water	200.2	386755
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	200.2	386755
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	200.2	386755

Prep Batch: 388098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	245.1	
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 388109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	245.1	386755
MB 440-386755/1-F	Method Blank	Dissolved	Water	245.1	386755
LCS 440-386755/2-F	Lab Control Sample	Dissolved	Water	245.1	386755
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	245.1	386755
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	245.1	386755

Analysis Batch: 388144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total Recoverable	Water	200.8	387948
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.8	387948
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.8	387948
440-175633-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	387948
440-175633-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	387948

Analysis Batch: 388152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	200.8	387966
MB 440-386755/1-E	Method Blank	Dissolved	Water	200.8	387966
LCS 440-386755/2-E	Lab Control Sample	Dissolved	Water	200.8	387966
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	200.8	387966
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	200.8	387966

Analysis Batch: 388283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	245.1	388098
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	388098
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	388098

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Metals (Continued)

Analysis Batch: 388283 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	388098
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	388098

Analysis Batch: 388551

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	245.1	388109
MB 440-386755/1-F	Method Blank	Dissolved	Water	245.1	388109
LCS 440-386755/2-F	Lab Control Sample	Dissolved	Water	245.1	388109
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	245.1	388109
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	245.1	388109

General Chemistry

Prep Batch: 387501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	Distill/CN	
MB 440-387501/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387501/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-175840-E-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-175840-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 387682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	SM 2540C	
MB 440-387682/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-387682/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-176243-B-6 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 388079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	SM 4500 CN E	387501
MB 440-387501/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387501
LCS 440-387501/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387501
440-175840-E-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	387501
440-175840-E-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	387501

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
BA	Relative percent difference out of control
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

440-175636

CHAIN OF CUSTODY FORM

Test America

Client Name/Address:
 Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108
Test America Contact: Unvashi Patel
 17461 Deivan Ave Suite #100
 Irvine CA 92614
 Tel 949-260-3288
 Cell 949-333-9055

Project:
 Boeing-SSFL NPDES
 Permit 2017
 Routine Outfall 003-007, 008, 010
 Outfall 009
 Comp

Project Manager: Katherine Miller
 520.289.8906, 520.904.8944 (cell)
Field Manager: Mark Dominick
 818.350.7312, 818.559.0702 (cell)

Sample Matrix: WM
Sampling Date/Time: 2/5/2017
Sample I.D.: Outfall009_20170205_Comp

Container Type: 900mL Poly
of Containers: 2
Preservative: HNO₃
Bottles: 96
MSMSD: No

Analysis Required:
 Total Recoverable Metals: Mercury (E245.1)
 Cyanide (SM4500-CN-E / E335.2)
 Chronic Toxicity - Selenium (EPA-821-R-02-013)
 Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1)
 Total Dissolved Metals: (E200.7): Ni, Zn (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl
 TDS (SM2540C/E160.1)
 CF, SO₄, NO₃+NO₂-N (300)
 TCDD (and all congeners) (E161B)
 Total Recoverable Metals: (E200.7): Ni, Zn (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl

Comments:
 Unfiltered and unpreserved analysis. Separate RAD onto another workorder.
 Analyze duplicate, not MSMSD.
 Only test if first or second rain events of the year.
 Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
 Filter and preserve w/in 24hrs of receipt at lab.
 Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
 Hold
 Hold

Relinquished By: [Signature] Date/Time: 2-5-17
Company: [Signature] Company: [Signature]
Received By: [Signature] Date/Time: 2/5/17
Company: [Signature] Company: [Signature]

Turn-around time: (Check)
 24 Hour: _____ 72 Hour: _____ 10 Day: _____ X
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
 In tact: _____ On low: _____
 Store samples for 6 months. Data Requirements: (Check) No Level IV: _____ All Level IV: _____ X



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175636-1

Login Number: 175636

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175636-1

Login Number: 175636

List Number: 2

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/07/17 04:41 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-175636-1	Outfall009_20170205_Comp		66		61		77		68
440-175636-1 - RA	Outfall009_20170205_Comp				67				
MB 320-149753/1-A	Method Blank		65		60		74		64
MB 320-149753/1-A - RA	Method Blank				59				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-175636-1	Outfall009_20170205_Comp		75		74		78		71
440-175636-1 - RA	Outfall009_20170205_Comp								
MB 320-149753/1-A	Method Blank		73		69		71		64
MB 320-149753/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-175636-1	Outfall009_20170205_Comp		69		66		71	88	
440-175636-1 - RA	Outfall009_20170205_Comp								
MB 320-149753/1-A	Method Blank		62		61		65	77	
MB 320-149753/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-175636-1	Outfall009_20170205_Comp		86		93		96
440-175636-1 - RA	Outfall009_20170205_Comp						
MB 320-149753/1-A	Method Blank		76		80		80
MB 320-149753/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-149753/2-A	Lab Control Sample	65	62	77	67	76	69	71	63
LCSD 320-149753/3-A	Lab Control Sample Dup	67	66	80	70	77	70	74	66

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-149753/2-A	Lab Control Sample	61	60	64	74	75	80	77
LCSD 320-149753/3-A	Lab Control Sample Dup	64	64	68	79	82	87	84

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175636-2

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/7/2017 10:51:36 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/7/2017 10:51:36 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175636-1	Outfall009_20170205_Comp	Water	02/05/17 08:00	02/05/17 10:30

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- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Job ID: 440-175636-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175636-2**

Comments

No additional comments.

Receipt

The samples were received on 2/5/2017 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.3° C, 1.3° C, 1.5° C and 1.6° C.

Receipt Exceptions

The following samples was listed on the Chain of Custody (COC); however, no samples was received: Outfall009_20170205_Comp (440-175636-1), Outfall009_20170205_Comp_F (440-175636-2) and Outfall009_20170205_Comp_Extra (440-175636-3).

We did not received the 6-1 gal for Chronic Selenustrum to ABC laboratories.

RAD

Method(s) 900.0: Gross alpha/beta Batch 295075:

The gross alpha detection goal was not met for the following samples due to a reduction of the sample size, which can be attributed to high residual mass: (440-175633-AD-1-B). Analytical results are reported with the detection limit achieved.

Method(s) 900.0: Gross alpha/beta Batch 295075:

The gross beta matrix spike / matrix spike duplicate (MSBT/MSBTD) replicated error ratio for preparation batch 160-295075 and analytical batch 160-296007 was outside control limits of 1.0 (1.44). Duplicate precision is demonstrated by an acceptable relative percent difference, within the control limit of 40% (32%). Analytical results are reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.363	U	0.799	0.800	3.00	1.42	pCi/L	02/28/17 10:05	03/05/17 19:53	1
Gross Beta	1.69	F	0.665	0.686	4.00	0.918	pCi/L	02/28/17 10:05	03/05/17 19:53	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-3.61	U	11.6	11.6	20.0	20.0	pCi/L	02/10/17 14:45	02/13/17 19:14	1
Potassium-40	-43.0	U	147	147		206	pCi/L	02/10/17 14:45	02/13/17 19:14	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0121	U	0.146	0.146	1.00	0.294	pCi/L	02/13/17 11:24	03/07/17 06:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.9		40 - 110					02/13/17 11:24	03/07/17 06:00	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0143	U	0.196	0.196	1.00	0.350	pCi/L	02/13/17 12:05	03/06/17 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.9		40 - 110					02/13/17 12:05	03/06/17 14:13	1
Y Carrier	93.8		40 - 110					02/13/17 12:05	03/06/17 14:13	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.119	U	0.155	0.155	3.00	0.257	pCi/L	02/16/17 09:55	02/27/17 11:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.3		40 - 110					02/16/17 09:55	02/27/17 11:12	1
Y Carrier	102		40 - 110					02/16/17 09:55	02/27/17 11:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-156	U	171	172	500	331	pCi/L	02/23/17 10:45	02/24/17 20:31	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.0849	U	0.1006	0.1007	1.00	0.134	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.7		30 - 110					02/21/17 13:19	02/24/17 17:20	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	295075	02/28/17 10:05	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	296007	03/05/17 19:53	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	291958	02/10/17 14:45	JDL	TAL SL
Total/NA	Analysis	901.1		1			292041	02/13/17 19:14	KLS	TAL SL
Total/NA	Prep	PrecSep-21			999.66 mL	1.0 g	292028	02/13/17 11:24	MBC	TAL SL
Total/NA	Analysis	903.0		1			296226	03/07/17 06:00	MLK	TAL SL
Total/NA	Prep	PrecSep_0			999.66 mL	1.0 g	292032	02/13/17 12:05	MBC	TAL SL
Total/NA	Analysis	904.0		1			296097	03/06/17 14:13	ALD	TAL SL
Total/NA	Prep	PrecSep-7			1000.15 mL	1.0 g	292776	02/16/17 09:55	BME	TAL SL
Total/NA	Analysis	905		1			294480	02/27/17 11:12	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	294253	02/23/17 10:45	JDL	TAL SL
Total/NA	Analysis	906.0		1			294715	02/24/17 20:31	MLK	TAL SL
Total/NA	Prep	ExtChrom			500.10 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294622	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-295075/1-A
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295075

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.1919	U	0.602	0.603	3.00	1.19	pCi/L	02/28/17 10:05	03/05/17 19:51	1
Gross Beta	-0.06449	U	0.497	0.497	4.00	0.906	pCi/L	02/28/17 10:05	03/05/17 19:51	1

Lab Sample ID: LCS 160-295075/2-A
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	43.45		6.39	3.00	1.90	pCi/L	87	73 - 133

Lab Sample ID: LCSB 160-295075/3-A
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	94.43		9.97	4.00	0.919	pCi/L	104	75 - 125

Lab Sample ID: 440-175633-AD-1-C MS
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	-0.524	U G	49.9	33.41		6.57	3.00	3.34	pCi/L	67	60 - 140

Lab Sample ID: 440-175633-AD-1-D MSD
Matrix: Water
Analysis Batch: 296194

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	-0.524	U G	49.9	38.67		7.51	3.00	4.49	pCi/L	77	60 - 140	0.37	1

Lab Sample ID: 440-175633-AD-1-E MSBT
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.66	F	91.0	108.4		12.0	4.00	2.36	pCi/L	114	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-175633-AD-1-F MSBTD
Matrix: Water
Analysis Batch: 296007

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295075

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.66	F	91.0	78.43	F	8.92	4.00	2.13	pCi/L	81	60 - 140	1.44	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-291958/1-A
Matrix: Water
Analysis Batch: 292041

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 291958

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	4.657	U	8.16	8.17	20.0	13.8	pCi/L	02/10/17 14:45	02/13/17 08:57	1
Potassium-40	23.76	U	127	127		185	pCi/L	02/10/17 14:45	02/13/17 08:57	1

Lab Sample ID: LCS 160-291958/2-A
Matrix: Water
Analysis Batch: 292041

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 291958

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	137000		15800		439	pCi/L	100	90 - 111
Cesium-137	47000	47960		4770	20.0	141	pCi/L	102	90 - 111
Cobalt-60	39800	39410		3890		103	pCi/L	99	89 - 110

Lab Sample ID: 440-175633-U-1-H DU
Matrix: Water
Analysis Batch: 292011

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 291958

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	6.01	U	0.1070	U	10.7	20.0	19.5	pCi/L		0.28	1
Potassium-40	52.0	U	-15.17	U	164		238	pCi/L		0.26	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292028/1-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292028

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.09280	U	0.162	0.162	1.00	0.285	pCi/L	02/13/17 11:24	03/07/17 06:00	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					02/13/17 11:24	03/07/17 06:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292028/2-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	10.97		1.36	1.00	0.265	pCi/L	97	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	90.9		40 - 110							

Lab Sample ID: 440-175840-G-1-A MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.110	U	11.3	10.98		1.43	1.00	0.316	pCi/L	97	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	70.8		40 - 110								

Lab Sample ID: 440-175840-G-1-B MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.110	U	11.3	11.35		1.46	1.00	0.326	pCi/L	101	75 - 138	0.13	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	72.0		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292032/1-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292032

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-228	0.1981	U	0.244	0.245	1.00	0.404	pCi/L	02/13/17 12:05	03/06/17 14:13	1	
Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac					
Ba Carrier	87.3		40 - 110	02/13/17 12:05	03/06/17 14:13	1					
Y Carrier	87.1		40 - 110	02/13/17 12:05	03/06/17 14:13	1					

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-292032/2-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	14.29		1.52	1.00	0.344	pCi/L	104	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	90.9		40 - 110
Y Carrier	96.1		40 - 110

Lab Sample ID: 440-175840-G-1-C MS
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.00442	U	13.8	15.32		1.69	1.00	0.503	pCi/L	111	45 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	70.8		40 - 110
Y Carrier	92.3		40 - 110

Lab Sample ID: 440-175840-G-1-D MSD
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.00442	U	13.7	15.21		1.67	1.00	0.504	pCi/L	111	45 - 150	0.03	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	72.0		40 - 110
Y Carrier	92.0		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-292776/1-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292776

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.07316	U	0.188	0.188	3.00	0.322	pCi/L	02/16/17 09:55	02/27/17 11:11	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.7		40 - 110	02/16/17 09:55	02/27/17 11:11	1
Y Carrier	95.0		40 - 110	02/16/17 09:55	02/27/17 11:11	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-292776/2-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.847		0.916	3.00	0.351	pCi/L	104	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	81.4		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-176655-Q-1-F MS
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.0146	U	8.50	8.744		0.942	3.00	0.350	pCi/L	103	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	65.6		40 - 110								
Y Carrier	92.7		40 - 110								

Lab Sample ID: 440-176655-Q-1-G MSD
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.0146	U	8.50	9.105		0.939	3.00	0.287	pCi/L	107	19 - 150	0.19	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	78.2		40 - 110										
Y Carrier	91.6		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-294253/1-A
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294253

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-99.55	U	178	179	500	335	pCi/L	02/23/17 10:45	02/24/17 16:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-294253/2-A
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2919		455	500	336	pCi/L	99	74 - 114

Lab Sample ID: 440-175633-V-1-C MSD
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-118	U	2950	2811		441	500	328	pCi/L	95	67 - 130	0.35	1

Lab Sample ID: 440-175840-H-1-A MS
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-40.5	U	2950	3144		481	500	348	pCi/L	107	67 - 130

Lab Sample ID: 440-175840-H-1-B MSD
Matrix: Water
Analysis Batch: 294715

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 294253

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-40.5	U	2950	2950		458	500	336	pCi/L	100	67 - 130	0.21	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.4		30 - 110					02/21/17 13:19	02/24/17 17:20	1

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

	LCS	LCS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	85.9		30 - 110

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146	
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	88.1		30 - 110

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146	0.01	1	
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1	

	MSD	MSD	
Tracer	%Yield	Qualifier	Limits
Uranium-232	87.1		30 - 110

Lab Sample ID: 440-175840-G-1-G MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146	
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	96.2		30 - 110

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1	
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1	

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

	<i>MSD</i>	<i>MSD</i>	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	82.1		30 - 110

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146	
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143	

	<i>MS</i>	<i>MS</i>	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	66.9		30 - 110

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1	
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1	

	<i>MSD</i>	<i>MSD</i>	
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Uranium-232	85.0		30 - 110

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Rad

Prep Batch: 291958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-291958/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-291958/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-175633-U-1-H DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	PrecSep-21	
MB 160-292028/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292028/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-175840-G-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-175840-G-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 292032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	PrecSep_0	
MB 160-292032/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292032/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-175840-G-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-175840-G-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 292776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	PrecSep-7	
MB 160-292776/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-292776/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-176655-Q-1-F MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-176655-Q-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 294253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-294253/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-294253/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-175633-V-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	
440-175840-H-1-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-175840-H-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Rad (Continued)

Prep Batch: 295075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total/NA	Water	Evaporation	
MB 160-295075/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-295075/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-295075/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-175633-AD-1-C MS	Matrix Spike	Total/NA	Water	Evaporation	
440-175633-AD-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-175633-AD-1-E MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-175633-AD-1-F MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Qualifiers

Rad

Qualifier	Qualifier Description
F	MS/MSD Recovery and/or RPD exceeds the control limits
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175636-2

Login Number: 175636

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175636-2

Login Number: 175636

List Number: 3

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/09/17 03:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19,19
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	
440-175636-1	Outfall009_20170205_Comp	87.9	
440-175840-G-1-A MS	Matrix Spike	70.8	
440-175840-G-1-B MSD	Matrix Spike Duplicate	72.0	
LCS 160-292028/2-A	Lab Control Sample	90.9	
MB 160-292028/1-A	Method Blank	87.3	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-175636-1	Outfall009_20170205_Comp	87.9	93.8
440-175840-G-1-C MS	Matrix Spike	70.8	92.3
440-175840-G-1-D MSD	Matrix Spike Duplicate	72.0	92.0
LCS 160-292032/2-A	Lab Control Sample	90.9	96.1
MB 160-292032/1-A	Method Blank	87.3	87.1
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-175636-1	Outfall009_20170205_Comp	78.3	102
440-176655-Q-1-F MS	Matrix Spike	65.6	92.7
440-176655-Q-1-G MSD	Matrix Spike Duplicate	78.2	91.6
LCS 160-292776/2-A	Lab Control Sample	81.4	92.7
MB 160-292776/1-A	Method Blank	82.7	95.0
Tracer/Carrier Legend			
Sr (C) = Sr Carrier			
Y = Y Carrier			

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	U-232 (30-110)	
440-175633-L-1-E MS	Matrix Spike	88.1	
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1	
440-175636-1	Outfall009_20170205_Comp	91.7	

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175840-G-1-G MS	Matrix Spike	96.2
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175636-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 7, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175636-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170205_ Comp	440-175636-1	N/A	Water	2/5/17 8:00 AM	E200.8
Outfall009_20170205_ Comp_F	440-175636-2	N/A	Water	2/5/17 8:00 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175636-4:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The collection times were not documented on the COC. The laboratory logged the samples per the collection times listed on the container labels.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

IV. METHOD 200.8— METALS

Kathryn Okonzak-Lowry of MEC^x reviewed the SDG on April 7, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, EPA Method 200.8, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals nickel and zinc, was met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the method 200.8 analytes were within NFG control limits of 90-110%.

It should be noted that the CRQL standard analysis raw data is missing for the dissolved sample 200.8 analysis run. The raw data was subsequently provided by the laboratory and sample qualification was not required.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

It should be noted that for the 200.8 dissolved sample analytical run, the ICB, bracketing CCB and method blank analysis raw data is missing from the package. The raw data was subsequently provided by the laboratory and sample qualification was not required.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site sample at concentrations less than half that of the ICSA, therefore, the sample was not assessed for matrix interference.

It should be noted that the ICSA analysis raw data is missing for the dissolved sample analytical run.

IV.3.3. LABORATORY CONTROL SAMPLES

The laboratory control sample recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on dissolved sample Outfall009_20170205_Comp_F. MS/MSD analyses were not performed on total sample Outfall009_20170205_Comp. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.



IV.4. SERIAL DILUTION

No serial dilution analysis was performed on the sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401756364

Analysis Method E200.8

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	1.3	10	0.50	ug/L	J,DX	J	DNQ
Zinc	T	7440-66-6	4.0	20	2.5	ug/L	J,DX	J	DNQ

Sample Name Outfall009_20170205_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	1.3	10	0.50	ug/L	J,DXQP	J	DNQ
Zinc	D	7440-66-6	4.6	20	2.5	ug/L	J,DXQP	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175636-4

Client Project/Site: Routine Outfall 009 Comp

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/29/2017 9:28:57 AM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/29/2017 9:28:57 AM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175636-1	Outfall009_20170205_Comp	Water	02/05/17 08:00	02/05/17 10:30
440-175636-2	Outfall009_20170205_Comp_F	Water	02/05/17 08:00	02/05/17 10:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Job ID: 440-175636-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175636-4**

Comments

200.7 metals analyzed with 200.8 method with 200.7 RLs.
Revision created to correct Ni limits.

Receipt

The samples were received on 2/5/2017 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.3° C, 1.3° C, 1.5° C and 1.6° C.

Receipt Exceptions

The following samples was listed on the Chain of Custody (COC); however, no samples was received: Outfall009_20170205_Comp (440-175636-1), Outfall009_20170205_Comp_F (440-175636-2) and Outfall009_20170205_Comp_Extra (440-175636-3).

We did not received the 6-1 gal for Chronic Selenustrum to ABC laboratories.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	1.3	J,DX	10	0.50	ug/L		02/13/17 08:20	02/13/17 22:20	1
Zinc	4.0	J,DX	20	2.5	ug/L		02/13/17 08:20	02/13/17 22:20	1

Client Sample ID: Outfall009_20170205_Comp_F

Lab Sample ID: 440-175636-2

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	1.3	J,DX QP	10	0.50	ug/L		02/13/17 09:18	02/13/17 15:57	1
Zinc	4.6	J,DX QP	20	2.5	ug/L		02/13/17 09:18	02/13/17 15:57	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Client Sample ID: Outfall009_20170205_Comp

Lab Sample ID: 440-175636-1

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	387948	02/13/17 08:20	EN	TAL IRV
Total Recoverable	Analysis	200.8		1			388144	02/13/17 22:20	IH1	TAL IRV

Client Sample ID: Outfall009_20170205_Comp_F

Lab Sample ID: 440-175636-2

Date Collected: 02/05/17 08:00

Matrix: Water

Date Received: 02/05/17 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	386755	02/06/17 15:05	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	387966	02/13/17 09:18	EN	TAL IRV
Dissolved	Analysis	200.8		1			388152	02/13/17 15:57	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-387948/1-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	0.50	ug/L		02/13/17 08:20	02/13/17 21:41	1
Zinc	ND		20	2.5	ug/L		02/13/17 08:20	02/13/17 21:41	1

Lab Sample ID: LCS 440-387948/2-A
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	80.4		ug/L		100	85 - 115
Zinc	80.0	80.2		ug/L		100	85 - 115

Lab Sample ID: 440-175633-A-1-E MS
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	0.97	J,DX	80.0	79.3		ug/L		98	70 - 130
Zinc	2.9	J,DX	80.0	80.9		ug/L		97	70 - 130

Lab Sample ID: 440-175633-A-1-F MSD
Matrix: Water
Analysis Batch: 388144

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 387948

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nickel	0.97	J,DX	80.0	77.4		ug/L		96	70 - 130	2	20
Zinc	2.9	J,DX	80.0	78.6		ug/L		95	70 - 130	3	20

Lab Sample ID: MB 440-386755/1-E
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 387966

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	0.50	ug/L		02/13/17 09:18	02/13/17 15:54	1
Zinc	ND		20	2.5	ug/L		02/13/17 09:18	02/13/17 15:54	1

Lab Sample ID: LCS 440-386755/2-E
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 387966

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	73.5		ug/L		92	85 - 115
Zinc	80.0	73.6		ug/L		92	85 - 115

Lab Sample ID: 440-175636-2 MS
Matrix: Water
Analysis Batch: 388152

Client Sample ID: Outfall009_20170205_Comp_F
Prep Type: Dissolved
Prep Batch: 387966

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	1.32		80.0	73.3		ug/L		90	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175636-2 MS
 Matrix: Water
 Analysis Batch: 388152

Client Sample ID: Outfall009_20170205_Comp_F
 Prep Type: Dissolved
 Prep Batch: 387966

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	4.60		80.0	74.8		ug/L		88	70 - 130

Lab Sample ID: 440-175636-2 MSD
 Matrix: Water
 Analysis Batch: 388152

Client Sample ID: Outfall009_20170205_Comp_F
 Prep Type: Dissolved
 Prep Batch: 387966

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	1.32		80.0	73.1		ug/L		90	70 - 130	0	20
Zinc	4.60		80.0	75.2		ug/L		88	70 - 130	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Metals

Filtration Batch: 386755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	FILTRATION	
MB 440-386755/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-386755/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	FILTRATION	
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 387948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total Recoverable	Water	200.2	
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175633-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-175633-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 387966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	200.2	386755
MB 440-386755/1-E	Method Blank	Dissolved	Water	200.2	386755
LCS 440-386755/2-E	Lab Control Sample	Dissolved	Water	200.2	386755
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	200.2	386755
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	200.2	386755

Analysis Batch: 388144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-1	Outfall009_20170205_Comp	Total Recoverable	Water	200.8	387948
MB 440-387948/1-A	Method Blank	Total Recoverable	Water	200.8	387948
LCS 440-387948/2-A	Lab Control Sample	Total Recoverable	Water	200.8	387948
440-175633-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	387948
440-175633-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	387948

Analysis Batch: 388152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175636-2	Outfall009_20170205_Comp_F	Dissolved	Water	200.8	387966
MB 440-386755/1-E	Method Blank	Dissolved	Water	200.8	387966
LCS 440-386755/2-E	Lab Control Sample	Dissolved	Water	200.8	387966
440-175636-2 MS	Outfall009_20170205_Comp_F	Dissolved	Water	200.8	387966
440-175636-2 MSD	Outfall009_20170205_Comp_F	Dissolved	Water	200.8	387966

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-175636-4

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175636-4

Login Number: 175636

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176633-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 27, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-176633-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170211_Grab	440-176633-1	N/A	Water	2/11/17 8:15 AM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176633-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 1664A - HEXANE EXTRACTABLE MATERIAL (OIL AND GREASE)

Marcia Hilchey of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was $\leq 11\%$.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401766331

Analysis Method *E1664*

Sample Name Outfall009_20170211_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/11/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-176633-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.3	1.5	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176633-1

Client Project/Site: Routine Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/25/2017 4:36:39 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/25/2017 4:36:39 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176633-1	Outfall009_20170211_Grab	Water	02/11/17 08:15	02/11/17 14:04

1

2

3

4

5

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Job ID: 440-176633-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176633-1

Comments

No additional comments.

Receipt

The samples were received on 2/11/2017 2:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-389881 and analytical batch 440-390355. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Client Sample ID: Outfall009_20170211_Grab

Lab Sample ID: 440-176633-1

Date Collected: 02/11/17 08:15

Matrix: Water

Date Received: 02/11/17 14:04

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		02/22/17 13:41	02/24/17 09:50	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Client Sample ID: Outfall009_20170211_Grab

Lab Sample ID: 440-176633-1

Date Collected: 02/11/17 08:15

Matrix: Water

Date Received: 02/11/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			950 mL	1000 mL	389881	02/22/17 13:41	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390355	02/24/17 09:50	L1A	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-389881/1-A
 Matrix: Water
 Analysis Batch: 390355

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 389881

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/22/17 13:41	02/24/17 09:50	1

Lab Sample ID: LCS 440-389881/2-A
 Matrix: Water
 Analysis Batch: 390355

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 389881

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	34.0		mg/L		85	78 - 114

Lab Sample ID: LCSD 440-389881/3-A
 Matrix: Water
 Analysis Batch: 390355

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 389881

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	33.3		mg/L		83	78 - 114	2	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

General Chemistry

Prep Batch: 389881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176633-1	Outfall009_20170211_Grab	Total/NA	Water	1664A	
MB 440-389881/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-389881/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-389881/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176633-1	Outfall009_20170211_Grab	Total/NA	Water	1664A	389881
MB 440-389881/1-A	Method Blank	Total/NA	Water	1664A	389881
LCS 440-389881/2-A	Lab Control Sample	Total/NA	Water	1664A	389881
LCSD 440-389881/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	389881

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-176633-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176633-1

Login Number: 176633

List Number: 1

Creator: Garcia, Veronica G

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176656-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-176656-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170212_Comp	440-176656-1	N/A	Water	2/12/17 9:05 AM	E1613B, E200.8, E245.1, E300, SM2540C, SM4500-CN-E
Outfall009_20170212_Comp_F	440-176656-2	N/A	Water	2/12/17 9:05 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176656-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- Corrections/strike-throughs on the original COC were not initialed and dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, HpCDF, HxCDD, HxCDF, PeCDF, and TCDD in the method blank were the same peaks comprising the totals in sample Outfall018_20170212_Comp. The results for totals HpCDD, HpCDF, HxCDD, HxCDF, PeCDF, and TCDD were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total result for TCDF in the sample included more



peaks than the method blank total. The sample result for total TCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Total TCDF containing EMPC peaks was qualified as estimated (J).



IV. METHODS 200.8 AND 245.1— METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on March 30, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall009_20170212_Comp for both total and dissolved metals. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 30 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 300.0, Standard Methods for the Examination of Water and Wastewater 2540C and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate
- 48 hours for nitrite/nitrate as N

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration log was provided by the laboratory.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.



V.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401766561

Analysis Method E1613B

Sample Name Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000011	0.000095	0.00000019	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000079	0.000095	0.00000021	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000050	0.000048	0.00000011	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.00000091	0.000048	0.00000021	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000026	0.000048	0.00000014	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000028	0.000048	0.00000012	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000048	0.00000013	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000015	0.000048	0.00000011	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000028	0.000048	0.00000013	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000048	0.00000011	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000027	0.000048	0.00000010	ug/L	J,DXMBq	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000048	0.00000013	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000048	0.00000021	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	ND	0.000048	0.00000010	ug/L	U	U	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000021	0.000048	0.00000013	ug/L	J,DXMBq	U	B
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000055	0.000095	0.00000012	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000095	0.0000011	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000031	0.000095	0.00000017	ug/L	J,DXMBq	U	B
37Cl4-2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	85508-50-5		0	0	ug/L			
37Cl4-2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	85508-50-5		0	0	ug/L			
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.00000076	0.000048	0.00000012	ug/L	J,DXMBq	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000022	0.000048	0.00000021	ug/L	J,DXMBq	U	B

Analysis Method E1613B

Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.00000043	0.000048	0.00000011	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000055	0.000048	0.00000012	ug/L	J,DXMBq	U	B
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000021	0.000048	0.00000013	ug/L	J,DXMBq	U	B
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000048	0.00000021	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000093	0.000095	0.00000012	ug/L	J,DXMBq	J	B, DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000031	0.000095	0.00000017	ug/L	J,DXMBq	U	B

Analysis Method E200.8

Sample Name Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	1.4	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	4.4	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall009_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	1.3	2.0	0.50	ug/L	J,DXQP	J	DNQ
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	3.8	2.0	0.50	ug/L	QP		
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	U	
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	U	
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	U	

Analysis Method E245.1**Sample Name** Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 9:05:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall009_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 9:05:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176656-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	U	

Analysis Method E300**Sample Name** Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 9:05:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	12	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	1.9	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	11	0.50	0.25	mg/L			

Analysis Method SM2540C**Sample Name** Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 9:05:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	140	10	5.0	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 9:05:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176656-1

Client Project/Site: Routine Outfall 009 Comp

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 10:08:42 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 10:08:42 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176656-1	Outfall009_20170212_Comp	Water	02/12/17 09:05	02/13/17 06:30
440-176656-2	Outfall009_20170212_Comp_F	Water	02/12/17 09:05	02/13/17 06:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Job ID: 440-176656-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176656-1

Comments

Revision created to add Chloride and sulfate.

Receipt

The samples were received on 2/13/2017 6:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 0.7° C.

Receipt Exceptions

Missed logging in Cl and SO4. it was caught when I was reviewing for invoicing.

HPLC/IC

Method(s) 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 440-387979 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 300.0: Due to the high concentration of Chloride and Sulfate the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-387980 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		0.50	0.25	mg/L			02/13/17 12:16	1
Sulfate	11		0.50	0.25	mg/L			02/13/17 12:16	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.9		0.15	0.070	mg/L			02/24/17 15:55	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.00000031	J,DX MB q	0.0000095	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,7,8-PeCDD	ND		0.000048	0.0000002	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
2,3,4,7,8-PeCDF	0.00000021	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,4,7,8-HxCDD	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,6,7,8-HxCDD	0.00000028	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,7,8,9-HxCDD	0.00000027	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,4,7,8-HxCDF	0.00000028	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,6,7,8-HxCDF	0.00000015	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,7,8,9-HxCDF	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
2,3,4,6,7,8-HxCDF	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,4,6,7,8-HpCDD	0.00000091	J,DX MB	0.000048	0.0000002	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,4,6,7,8-HpCDF	0.00000050	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
1,2,3,4,7,8,9-HpCDF	0.00000026	J,DX MB	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
OCDD	0.00000079	J,DX MB	0.000095	0.0000002	ug/L		02/15/17 08:22	02/16/17 22:07	1
OCDF	0.00000011	J,DX MB	0.000095	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total TCDD	0.00000031	J,DX MB q	0.0000095	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total TCDF	0.00000093	J,DX MB q	0.0000095	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total PeCDD	ND		0.000048	0.0000002	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total PeCDF	0.00000021	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total HxCDD	0.00000055	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total HxCDF	0.00000043	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
Total HpCDD	0.00000022	J,DX MB q	0.000048	0.0000002	ug/L		02/15/17 08:22	02/16/17 22:07	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDF	0.0000076	J,DX MB q	0.000048	0.000001	ug/L		02/15/17 08:22	02/16/17 22:07	1
				2					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	73		25 - 164				02/15/17 08:22	02/16/17 22:07	1
13C-2,3,7,8-TCDF	72		24 - 169				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,7,8-PeCDD	82		25 - 181				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,7,8-PeCDF	74		24 - 185				02/15/17 08:22	02/16/17 22:07	1
13C-2,3,4,7,8-PeCDF	84		21 - 178				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,4,7,8-HxCDD	83		32 - 141				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,6,7,8-HxCDD	95		28 - 130				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,4,7,8-HxCDF	87		26 - 152				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,6,7,8-HxCDF	88		26 - 123				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,7,8,9-HxCDF	79		29 - 147				02/15/17 08:22	02/16/17 22:07	1
13C-2,3,4,6,7,8-HxCDF	89		28 - 136				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,4,6,7,8-HpCDD	85		23 - 140				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,4,6,7,8-HpCDF	88		28 - 143				02/15/17 08:22	02/16/17 22:07	1
13C-1,2,3,4,7,8,9-HpCDF	88		26 - 138				02/15/17 08:22	02/16/17 22:07	1
13C-OCDD	87		17 - 157				02/15/17 08:22	02/16/17 22:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197				02/15/17 08:22	02/16/17 22:07	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000095	0.000011	ug/L		02/15/17 08:22	02/17/17 20:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	69		24 - 169				02/15/17 08:22	02/17/17 20:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				02/15/17 08:22	02/17/17 20:53	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:53	1
Cadmium	ND		1.0	0.25	ug/L		02/20/17 10:20	02/22/17 16:53	1
Copper	4.4		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:53	1
Lead	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:53	1
Antimony	1.4	J,DX	2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:53	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:53	1
Thallium	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:53	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/14/17 21:26	02/16/17 21:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	140		10	5.0	mg/L			02/16/17 08:15	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:51	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Client Sample ID: Outfall009_20170212_Comp_F

Lab Sample ID: 440-176656-2

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	1.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:27	1
Cadmium	ND	QP	1.0	0.25	ug/L		02/20/17 12:09	03/02/17 21:27	1
Copper	3.8	QP	2.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:27	1
Lead	ND	QP	1.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:27	1
Antimony	1.3	J,DX QP	2.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:27	1
Selenium	ND	QP	2.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:27	1
Thallium	ND	QP	1.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:27	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/23/17 23:19	02/24/17 22:54	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			387980	02/13/17 12:16	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			390474	02/24/17 15:55	NN	TAL IRV
Total/NA	Prep	1613B			1051.7 mL	20 uL	150582	02/15/17 08:22	DXD	TAL SAC
Total/NA	Analysis	1613B		1			151020	02/16/17 22:07	ALM	TAL SAC
Total/NA	Prep	1613B	RA		1051.7 mL	20 uL	150582	02/15/17 08:22	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			151375	02/17/17 20:53	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	389269	02/20/17 10:20	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			389969	02/22/17 16:53	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388305	02/14/17 21:26	DB	TAL IRV
Total/NA	Analysis	245.1		1			388804	02/16/17 21:58	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	388595	02/16/17 08:15	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387906	02/13/17 14:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388090	02/13/17 20:51	SN	TAL IRV

Client Sample ID: Outfall009_20170212_Comp_F

Lab Sample ID: 440-176656-2

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	389307	02/20/17 12:09	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			392284	03/02/17 21:27	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390522	02/23/17 23:19	DB	TAL IRV
Dissolved	Analysis	245.1		1			390527	02/24/17 22:54	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-387980/5
Matrix: Water
Analysis Batch: 387980

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/13/17 11:39	1
Sulfate	ND		0.50	0.25	mg/L			02/13/17 11:39	1

Lab Sample ID: LCS 440-387980/4
Matrix: Water
Analysis Batch: 387980

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.73		mg/L		95	90 - 110
Sulfate	5.00	4.81		mg/L		96	90 - 110

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.000000635	J,DX q	0.000010	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8-PeCDD	0.00000104	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8-PeCDF	0.00000180	J,DX	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
2,3,4,7,8-PeCDF	0.00000146	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,4,7,8-HxCDD	0.00000126	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,6,7,8-HxCDD	0.00000216	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8,9-HxCDD	0.00000154	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,4,7,8-HxCDF	0.00000192	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,6,7,8-HxCDF	0.00000179	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8,9-HxCDF	0.00000162	J,DX q	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
2,3,4,6,7,8-HxCDF	0.00000166	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,4,6,7,8-HpCDD	0.00000242	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,4,6,7,8-HpCDF	0.00000212	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,4,7,8,9-HpCDF	0.00000173	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
OCDD	0.0000105	J,DX	0.00010	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
OCDF	0.00000444	J,DX	0.00010	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total TCDD	0.000000635	J,DX q	0.000010	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDF	0.00000105	J,DX	0.000010	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total PeCDD	0.00000104	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total PeCDF	0.00000326	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total HxCDD	0.00000495	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total HxCDF	0.00000700	J,DX q	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total HpCDD	0.00000376	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
Total HpCDF	0.00000385	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	60		25 - 164	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,7,8-TCDF	58		24 - 169	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138	02/15/17 08:22	02/16/17 18:17	1
13C-OCDD	63		17 - 157	02/15/17 08:22	02/16/17 18:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	02/15/17 08:22	02/16/17 18:17	1

Lab Sample ID: LCS 320-150582/2-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150582

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000214	MB	ug/L		107	67 - 158
2,3,7,8-TCDF	0.000200	0.000232	MB	ug/L		116	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00109	MB	ug/L		109	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00118	MB	ug/L		118	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00109	MB	ug/L		109	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00109	MB	ug/L		109	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00112	MB	ug/L		112	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00103	MB	ug/L		103	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00108	MB	ug/L		108	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00112	MB	ug/L		112	84 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-150582/2-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150582

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
1,2,3,7,8,9-HxCDF	0.00100	0.00114	MB	ug/L		114	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00116	MB	ug/L		116	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00108	MB	ug/L		108	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00112	MB	ug/L		112	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104	MB	ug/L		104	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00213	MB	ug/L		106	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	68		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202
13C-1,2,3,6,7,8-HxCDF	66		21 - 159
13C-1,2,3,7,8,9-HxCDF	60		17 - 205
13C-2,3,4,6,7,8-HxCDF	65		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	64		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-150582/3-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150582

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
2,3,7,8-TCDD	0.000200	0.000216	MB	ug/L		108	67 - 158	1	50	
2,3,7,8-TCDF	0.000200	0.000228	MB	ug/L		114	75 - 158	2	50	
1,2,3,7,8-PeCDD	0.00100	0.00104	MB	ug/L		104	70 - 142	5	50	
1,2,3,7,8-PeCDF	0.00100	0.00107	MB	ug/L		107	80 - 134	10	50	
2,3,4,7,8-PeCDF	0.00100	0.00104	MB	ug/L		104	68 - 160	5	50	
1,2,3,4,7,8-HxCDD	0.00100	0.000922	MB	ug/L		92	70 - 164	17	50	
1,2,3,6,7,8-HxCDD	0.00100	0.000969	MB	ug/L		97	76 - 134	15	50	
1,2,3,7,8,9-HxCDD	0.00100	0.000827	MB	ug/L		83	64 - 162	22	50	
1,2,3,4,7,8-HxCDF	0.00100	0.000951	MB	ug/L		95	72 - 134	13	50	
1,2,3,6,7,8-HxCDF	0.00100	0.000989	MB	ug/L		99	84 - 130	12	50	
1,2,3,7,8,9-HxCDF	0.00100	0.00101	MB	ug/L		101	78 - 130	12	50	
2,3,4,6,7,8-HxCDF	0.00100	0.000992	MB	ug/L		99	70 - 156	15	50	
1,2,3,4,6,7,8-HpCDD	0.00100	0.000903	MB	ug/L		90	70 - 140	18	50	
1,2,3,4,6,7,8-HpCDF	0.00100	0.000934	MB	ug/L		93	82 - 122	18	50	
1,2,3,4,7,8,9-HpCDF	0.00100	0.000875	MB	ug/L		88	78 - 138	17	50	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-150582/3-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150582

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
OCDD	0.00200	0.00175	MB	ug/L		88	78 - 144	13	50
OCDF	0.00200	0.00189	MB	ug/L		94	63 - 170	12	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	59		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,6,7,8-HxCDD	73		25 - 163
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	58		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	64		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	88		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151375

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000015	ug/L		02/15/17 08:22	02/17/17 18:59	1

Isotope Dilution	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDF - RA	57		24 - 169	02/15/17 08:22	02/17/17 18:59	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD - RA	86		35 - 197	02/15/17 08:22	02/17/17 18:59	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Cadmium	ND		1.0	0.25	ug/L		02/20/17 10:20	02/22/17 16:37	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Lead	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Antimony	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Thallium	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1

Lab Sample ID: LCS 440-389269/2-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	79.8		ug/L		100	85 - 115
Cadmium	80.0	79.5		ug/L		99	85 - 115
Copper	80.0	81.6		ug/L		102	85 - 115
Lead	80.0	79.0		ug/L		99	85 - 115
Antimony	80.0	81.5		ug/L		102	85 - 115
Selenium	80.0	81.9		ug/L		102	85 - 115
Thallium	80.0	82.0		ug/L		103	85 - 115

Lab Sample ID: 440-176655-A-1-E MS
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND		80.0	78.2		ug/L		98	70 - 130
Cadmium	ND		80.0	79.8		ug/L		100	70 - 130
Copper	1.7	J,DX	80.0	80.3		ug/L		98	70 - 130
Lead	ND		80.0	78.1		ug/L		98	70 - 130
Antimony	ND		80.0	83.6		ug/L		105	70 - 130
Selenium	ND		80.0	80.7		ug/L		101	70 - 130
Thallium	ND		80.0	80.7		ug/L		101	70 - 130

Lab Sample ID: 440-176655-A-1-F MSD
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	78.2	BA	ug/L		98	70 - 130	200	20
Cadmium	ND		80.0	78.7	BA	ug/L		98	70 - 130	200	20
Copper	1.7	J,DX	80.0	79.6	BA	ug/L		97	70 - 130	200	20
Lead	ND		80.0	75.3	BA	ug/L		94	70 - 130	200	20
Antimony	ND		80.0	83.4	BA	ug/L		104	70 - 130	200	20
Selenium	ND		80.0	79.0	BA	ug/L		99	70 - 130	200	20
Thallium	ND		80.0	80.5	BA	ug/L		101	70 - 130	200	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-388058/1-D
Matrix: Water
Analysis Batch: 392284

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389307

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
Silver	ND		1.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:22	1	
Cadmium	ND		1.0	0.25	ug/L		02/20/17 12:09	03/02/17 21:22	1	
Copper	ND		2.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:22	1	
Lead	ND		1.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:22	1	
Antimony	ND		2.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:22	1	
Selenium	ND		2.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:22	1	
Thallium	ND		1.0	0.50	ug/L		02/20/17 12:09	03/02/17 21:22	1	

Lab Sample ID: LCS 440-388058/2-D
Matrix: Water
Analysis Batch: 392284

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 389307

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	82.4		ug/L		103	85 - 115
Cadmium	80.0	82.5		ug/L		103	85 - 115
Copper	80.0	84.5		ug/L		106	85 - 115
Lead	80.0	83.2		ug/L		104	85 - 115
Antimony	80.0	84.1		ug/L		105	85 - 115
Selenium	80.0	78.1		ug/L		98	85 - 115
Thallium	80.0	86.2		ug/L		108	85 - 115

Lab Sample ID: 440-176656-2 MS
Matrix: Water
Analysis Batch: 392284

Client Sample ID: Outfall009_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389307

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND	QP	80.0	76.5		ug/L		96	70 - 130
Cadmium	ND	QP	80.0	76.8		ug/L		96	70 - 130
Copper	3.8	QP	80.0	80.3		ug/L		96	70 - 130
Lead	ND	QP	80.0	76.5		ug/L		96	70 - 130
Antimony	1.3	J,DX QP	80.0	80.6		ug/L		99	70 - 130
Selenium	ND	QP	80.0	73.5		ug/L		92	70 - 130
Thallium	ND	QP	80.0	79.3		ug/L		99	70 - 130

Lab Sample ID: 440-176656-2 MSD
Matrix: Water
Analysis Batch: 392284

Client Sample ID: Outfall009_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 389307

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Silver	ND	QP	80.0	74.6		ug/L		93	70 - 130	2	20
Cadmium	ND	QP	80.0	74.4		ug/L		93	70 - 130	3	20
Copper	3.8	QP	80.0	78.1		ug/L		93	70 - 130	3	20
Lead	ND	QP	80.0	74.5		ug/L		93	70 - 130	3	20
Antimony	1.3	J,DX QP	80.0	78.0		ug/L		96	70 - 130	3	20
Selenium	ND	QP	80.0	71.8		ug/L		90	70 - 130	2	20
Thallium	ND	QP	80.0	78.1		ug/L		98	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388305/1-A
Matrix: Water
Analysis Batch: 388799

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388305

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/14/17 21:26	02/16/17 21:07	1

Lab Sample ID: LCS 440-388305/2-A
Matrix: Water
Analysis Batch: 388799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388305

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.49		ug/L		106	85 - 115

Lab Sample ID: 440-175633-A-1-H MS
Matrix: Water
Analysis Batch: 388799

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 388305

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.34		ug/L		104	70 - 130

Lab Sample ID: 440-175633-A-1-I MSD
Matrix: Water
Analysis Batch: 388799

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 388305

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.35		ug/L		104	70 - 130	0	20

Lab Sample ID: MB 440-388058/1-F
Matrix: Water
Analysis Batch: 390527

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390522

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/23/17 23:19	02/24/17 22:49	1

Lab Sample ID: LCS 440-388058/2-F
Matrix: Water
Analysis Batch: 390527

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390522

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.91		ug/L		99	85 - 115

Lab Sample ID: 440-176656-2 MS
Matrix: Water
Analysis Batch: 390527

Client Sample ID: Outfall009_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 390522

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	8.02		ug/L		100	70 - 130

Lab Sample ID: 440-176656-2 MSD
Matrix: Water
Analysis Batch: 390527

Client Sample ID: Outfall009_20170212_Comp_F
Prep Type: Dissolved
Prep Batch: 390522

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	8.11		ug/L		101	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-388595/1
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/16/17 08:15	1

Lab Sample ID: LCS 440-388595/2
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	964		mg/L		96	90 - 110

Lab Sample ID: 440-176891-A-44 DU
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	4700		4770		mg/L		0.6	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387906/1-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387906

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:50	1

Lab Sample ID: LCS 440-387906/2-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.9		ug/L		97	90 - 110

Lab Sample ID: LCSD 440-387906/3-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	96.8		ug/L		97	90 - 110	0	10

Lab Sample ID: 440-176655-K-1-B MSD
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.7		ug/L		100	70 - 115	2	15

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-176655-K-1-C MS
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	97.9		ug/L		98	70 - 115

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

HPLC/IC

Analysis Batch: 387980

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	300.0	
MB 440-387980/5	Method Blank	Total/NA	Water	300.0	
LCS 440-387980/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 390474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 150582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	1613B	
440-176656-1 - RA	Outfall009_20170212_Comp	Total/NA	Water	1613B	
MB 320-150582/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-150582/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-150582/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-150582/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 151020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	1613B	150582
MB 320-150582/1-A	Method Blank	Total/NA	Water	1613B	150582
LCS 320-150582/2-A	Lab Control Sample	Total/NA	Water	1613B	150582
LCS 320-150582/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	150582

Analysis Batch: 151375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1 - RA	Outfall009_20170212_Comp	Total/NA	Water	1613B	150582
MB 320-150582/1-A - RA	Method Blank	Total/NA	Water	1613B	150582

Metals

Filtration Batch: 388058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388058/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-388058/1-F	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388058/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-388058/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-176656-2 MS	Outfall009_20170212_Comp_F	Dissolved	Water	FILTRATION	
440-176656-2 MSD	Outfall009_20170212_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 388305

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	245.1	
MB 440-388305/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388305/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-175633-A-1-H MS	Matrix Spike	Total/NA	Water	245.1	
440-175633-A-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Metals (Continued)

Analysis Batch: 388799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-388305/1-A	Method Blank	Total/NA	Water	245.1	388305
LCS 440-388305/2-A	Lab Control Sample	Total/NA	Water	245.1	388305
440-175633-A-1-H MS	Matrix Spike	Total/NA	Water	245.1	388305
440-175633-A-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	388305

Analysis Batch: 388804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	245.1	388305

Prep Batch: 389269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total Recoverable	Water	200.2	
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 389307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	200.2	388058
MB 440-388058/1-D	Method Blank	Dissolved	Water	200.2	388058
LCS 440-388058/2-D	Lab Control Sample	Dissolved	Water	200.2	388058
440-176656-2 MS	Outfall009_20170212_Comp_F	Dissolved	Water	200.2	388058
440-176656-2 MSD	Outfall009_20170212_Comp_F	Dissolved	Water	200.2	388058

Analysis Batch: 389969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total Recoverable	Water	200.8	389269
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.8	389269
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389269
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	389269
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	389269

Prep Batch: 390522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	245.1	388058
MB 440-388058/1-F	Method Blank	Dissolved	Water	245.1	388058
LCS 440-388058/2-F	Lab Control Sample	Dissolved	Water	245.1	388058
440-176656-2 MS	Outfall009_20170212_Comp_F	Dissolved	Water	245.1	388058
440-176656-2 MSD	Outfall009_20170212_Comp_F	Dissolved	Water	245.1	388058

Analysis Batch: 390527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	245.1	390522
MB 440-388058/1-F	Method Blank	Dissolved	Water	245.1	390522
LCS 440-388058/2-F	Lab Control Sample	Dissolved	Water	245.1	390522
440-176656-2 MS	Outfall009_20170212_Comp_F	Dissolved	Water	245.1	390522
440-176656-2 MSD	Outfall009_20170212_Comp_F	Dissolved	Water	245.1	390522

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Metals (Continued)

Analysis Batch: 392284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	200.8	389307
MB 440-388058/1-D	Method Blank	Dissolved	Water	200.8	389307
LCS 440-388058/2-D	Lab Control Sample	Dissolved	Water	200.8	389307
440-176656-2 MS	Outfall009_20170212_Comp_F	Dissolved	Water	200.8	389307
440-176656-2 MSD	Outfall009_20170212_Comp_F	Dissolved	Water	200.8	389307

General Chemistry

Prep Batch: 387906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	Distill/CN	
MB 440-387906/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	Distill/CN	

Analysis Batch: 388090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	SM 4500 CN E	387906
MB 440-387906/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387906
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387906
LCSD 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	387906

Analysis Batch: 388595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	SM 2540C	
MB 440-388595/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-388595/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-176891-A-44 DU	Duplicate	Total/NA	Water	SM 2540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
BA	Relative percent difference out of control
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi		Lab PM: Patel, Urvashi		COC No: 440-107494.1	
Client Contact: Shipping/Receiving		Phone:		E-Mail: urvashi.patel@testamericainc.com		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Address: 13715 Rider Trail North,		City: Earth City		State of Origin: California	
Address: 13715 Rider Trail North,		City: Earth City		State of Origin: California		Job #: 440-176656-1	
City: Earth City		State, Zip: MO, 63045		Due Date Requested: 2/23/2017		Accreditations Required (See note): State Program - California	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Email:		TAT Requested (days):		Preservation Codes: M - Hexane N - None O - AcNaO2 P - Na2OAS Q - Na2SO3 R - H2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify) Other:	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		PO #:		Analysis Requested:	
Site:		SSOW#:		WFO #:		Total Number of containers	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
Outfall009_20170212_Comp (440-176656-1)		2/12/17		09-05 Pacific		Water	
Matrix (Hexane, Spiked, On-site, Other)		Preservation Code:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)	
900.0/Evaporation Gross Alpha/Beta		X		X		X	
901.3/Fill,Geo,0 K-40 and Cesium-137		X		X		X	
903.0/PreSep,21 Radium-226		X		X		X	
905.0/PreSep,0 Radium-228		X		X		X	
905.5/90PreSep,7 Strontium-90		X		X		X	
906.0/LSC,Dist,Susp Tritium		X		X		X	
A01R,U/EtChrom,Actin Total Uranium		X		X		X	
Special Instructions/Note:		Boeing SSFL; DO NOT FILTER; use prep date from preservation					

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody abiding to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Return To Client Disposal By Lab Archive For _____ Months

Relinquished by: <i>[Signature]</i>	Date: 2/13/17 @ 1700	Company: [Signature]	Received by: [Signature]	Date/Time: 2/14/17 0710	Company: [Signature]
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Yes No Custody Seal No.: _____
 Cooled Temperature(s) °C and Other Remarks:

- 1
- 2
- 3
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- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Chain of Custody Record



Client Information (Sub Contract Lab)		Company: TestAmerica Laboratories, Inc.		Lab PM: Patel, Urvashi		Carrier Tracking No(s): 440-107487.1	
Address: 880 Riverside Parkway, West Sacramento, CA 95605		Phone: 916-373-5600 (Tel) 916-372-1059 (Fax)		E-Mail: urvashi.patel@testamericainc.com		State of Origin: California	
Due Date Requested: 2/23/2017		TAT Requested (days):		Accreditations Required (See note): State Program - California		Job #: 440-176656-1	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		State Program - California		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Site:		SSOW#		Analysis Requested		Total Number of Containers	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
Outfall009_20170212_Comp (440-176656-1)		2/12/17		09:05 Pacific		Water	
Outfall009_20170212_Comp_Extra (440-176656-3)		2/12/17		09:05 Pacific		Water	
Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		1613B/1613B_Box_Sep_P Standard List w/ Totals		Special Instructions/Note: See QAS, Boeing_wiu to zero, ug/L; Use Boeing glassware. See QAS, Boeing_wiu to zero, ug/L; Use Boeing glassware.	
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Unconfirmed		Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Time:	
Empty Kit Relinquished by:		Date:		Method of Shipment:		Received by:	
Date/Time: 2/13/17 09:17:00		Date/Time: 2/14/17 0000		Company: F&T		Company: F&T	
Date/Time:		Date/Time:		Company:		Company:	
Custody Seats Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 6.0°C (1-7°C) ice		Company:	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176656-1

Login Number: 176656

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176656-1

Login Number: 176656

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 02/14/17 12:28 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-176656-1	Outfall009_20170212_Comp		73		72		82		74
440-176656-1 - RA	Outfall009_20170212_Comp				69				
MB 320-150582/1-A	Method Blank		60		58		64		56
MB 320-150582/1-A - RA	Method Blank				57				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-176656-1	Outfall009_20170212_Comp		84		83		95		87
440-176656-1 - RA	Outfall009_20170212_Comp								
MB 320-150582/1-A	Method Blank		65		63		68		63
MB 320-150582/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-176656-1	Outfall009_20170212_Comp		88		79		89	85	
440-176656-1 - RA	Outfall009_20170212_Comp								
MB 320-150582/1-A	Method Blank		64		58		62	62	
MB 320-150582/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-176656-1	Outfall009_20170212_Comp		88		88		87
440-176656-1 - RA	Outfall009_20170212_Comp						
MB 320-150582/1-A	Method Blank		64		62		63
MB 320-150582/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-150582/2-A	Lab Control Sample	62	59	68	59	68	65	71	64
LCSD 320-150582/3-A	Lab Control Sample Dup	59	59	65	59	66	66	73	63

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-150582/2-A	Lab Control Sample	66	60	65	63	64	64	64
LCSD 320-150582/3-A	Lab Control Sample Dup	65	58	66	63	64	64	64

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176656-2

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 10:13:07 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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results through

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 10:13:07 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176656-1	Outfall009_20170212_Comp	Water	02/12/17 09:05	02/13/17 06:30

- 1
- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Job ID: 440-176656-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176656-2

Comments

No additional comments.

Receipt

The samples were received on 2/13/2017 6:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 0.7° C.

RAD

Method(s) 901.1: Gamma Prep Batch: 160-292601

The sample duplicate had an MDC of 20.9 with a requested limit (RL) of 20.0 pCi/L for Cs-137. The calculated result (-9.253 pCi/L) is well below the RL and the replicate error ratio is 0.55 with a limit of 1. The reproducibility is valid and the sample results are not believed to be affected by this statistical anomaly. The data is provided with this narrative.

(440-176654-Q-1-B DU)

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160- 292776

The strontium carrier recovery (32%) is outside the lower control limit (40%) for the following sample: Outfall009_20170212_Comp (440-176656-1). There was physical evidence of matrix interference apparent during the initial preparation of the sample. The QC samples associated with the batch have acceptable carrier recovery indicating the presence of matrix interference.

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295123

The following sample was re-precipitated in this batch due to a low carrier recovery in the previous batch (160-292776) and was prepped at a reduced aliquot to minimize matrix interference. A laboratory control sample and laboratory control sample duplicate (LCS/LCSD) were prepped to demonstrate batch precision.

Outfall009_20170212_Comp (440-176656-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.244	U	0.843	0.843	3.00	1.69	pCi/L	03/06/17 14:35	03/10/17 18:16	1
Gross Beta	1.80		0.769	0.790	4.00	1.12	pCi/L	03/06/17 14:35	03/10/17 18:16	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	5.35	U	10.6	10.6	20.0	17.9	pCi/L	02/15/17 13:15	02/15/17 15:40	1
Potassium-40	-141	U	122	123		247	pCi/L	02/15/17 13:15	02/15/17 15:40	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00464	U	0.0841	0.0841	1.00	0.171	pCi/L	02/16/17 10:06	03/10/17 06:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.3		40 - 110					02/16/17 10:06	03/10/17 06:13	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0355	U	0.279	0.279	1.00	0.489	pCi/L	02/16/17 14:27	03/07/17 14:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.3		40 - 110					02/16/17 14:27	03/07/17 14:30	1
Y Carrier	89.3		40 - 110					02/16/17 14:27	03/07/17 14:30	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.113	U	0.350	0.351	3.00	0.608	pCi/L	02/28/17 14:17	03/08/17 11:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.3		40 - 110					02/28/17 14:17	03/08/17 11:40	1
Y Carrier	95.0		40 - 110					02/28/17 14:17	03/08/17 11:40	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-145	U	164	165	500	320	pCi/L	03/08/17 12:29	03/08/17 17:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.142		0.1111	0.1115	1.00	0.0948	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	92.6		30 - 110					02/21/17 13:19	02/24/17 17:20	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	295726	03/06/17 14:35	MRB	TAL SL
Total/NA	Analysis	900.0		1			297171	03/10/17 18:16	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	292601	02/15/17 13:15	R1S	TAL SL
Total/NA	Analysis	901.1		1			292643	02/15/17 15:40	CDR	TAL SL
Total/NA	Prep	PrecSep-21			1000.80 mL	1.0 g	292779	02/16/17 10:06	PJM	TAL SL
Total/NA	Analysis	903.0		1			296973	03/10/17 06:13	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.80 mL	1.0 g	292818	02/16/17 14:27	PJM	TAL SL
Total/NA	Analysis	904.0		1			296226	03/07/17 14:30	MLK	TAL SL
Total/NA	Prep	PrecSep-7			500.08 mL	1.0 g	295123	02/28/17 14:17	BME	TAL SL
Total/NA	Analysis	905		1			296638	03/08/17 11:40	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.2 mL	1.0 g	296618	03/08/17 12:29	JDL	TAL SL
Total/NA	Analysis	906.0		1			296794	03/08/17 17:14	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.27 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294631	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-295726/1-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295726

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.4199	U	0.555	0.558	3.00	1.19	pCi/L	03/03/17 08:15	03/10/17 11:51	1
Gross Beta	-0.3095	U	0.536	0.537	4.00	1.00	pCi/L	03/03/17 08:15	03/10/17 11:51	1

Lab Sample ID: LCS 160-295726/2-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	47.25		6.90	3.00	1.82	pCi/L	95	73 - 133

Lab Sample ID: LCSB 160-295726/3-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	90.52		9.60	4.00	1.13	pCi/L	99	75 - 125

Lab Sample ID: 440-175840-G-1-N MS
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.992	U	49.9	40.06		6.01	3.00	1.64	pCi/L	80	60 - 140

Lab Sample ID: 440-175840-G-1-O MSD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
						Uncert. (2σ+/-)							
Gross Alpha	0.992	U	49.9	30.30		4.78	3.00	1.56	pCi/L	61	60 - 140	0.90	1

Lab Sample ID: 440-175840-G-1-P MSBT
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	2.81		91.0	92.89		9.82	4.00	0.991	pCi/L	99	60 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-175840-G-1-Q MSBTD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	2.81		91.0	93.16		9.85	4.00	0.971	pCi/L	99	60 - 140	0.01	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-292601/1-A
Matrix: Water
Analysis Batch: 292642

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292601

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-2.043	U	10.7	10.7	20.0	18.6	pCi/L	02/15/17 13:15	02/15/17 15:37	1
Potassium-40	-29.64	U	98.0	98.0		148	pCi/L	02/15/17 13:15	02/15/17 15:37	1

Lab Sample ID: LCS 160-292601/2-A
Matrix: Water
Analysis Batch: 292644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292601

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132500		15300		435	pCi/L	97	90 - 111
Cesium-137	47000	46370		4650	20.0	157	pCi/L	99	90 - 111
Cobalt-60	39800	38420		3800		83.8	pCi/L	97	89 - 110

Lab Sample ID: 440-176654-Q-1-B DU
Matrix: Water
Analysis Batch: 292647

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292601

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	RER	RER Limit
Cesium-137	2.41	U	-9.253	U G	14.1	20.0	20.9	pCi/L		0.55	1
Potassium-40	8.39	U	14.59	U	83.3		145	pCi/L		0.03	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292779/1-A
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292779

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01710	U	0.0996	0.0997	1.00	0.207	pCi/L	02/16/17 10:06	03/10/17 06:08	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110					02/16/17 10:06	03/10/17 06:08	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292779/2-A
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	11.12		1.25	1.00	0.194	pCi/L	99	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	87.6		40 - 110							

Lab Sample ID: 440-176655-Q-1-C MS
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.00707	U	11.3	11.65		1.30	1.00	0.169	pCi/L	103	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	87.3		40 - 110								

Lab Sample ID: 440-176655-Q-1-D MSD
Matrix: Water
Analysis Batch: 296973

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.00707	U	11.2	9.978		1.13	1.00	0.201	pCi/L	89	75 - 138	0.69	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	87.6		40 - 110										

Lab Sample ID: 180-63329-A-7-A DU
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.744		0.7010		0.216	1.00	0.180	pCi/L	0.1	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	84.7		40 - 110							

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292818/1-A
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292818

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09113	U	0.238	0.238	1.00	0.411	pCi/L	02/16/17 14:27	03/07/17 14:26	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110	02/16/17 14:27	03/07/17 14:26	1
Y Carrier	90.1		40 - 110	02/16/17 14:27	03/07/17 14:26	1

Lab Sample ID: LCS 160-292818/2-A
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	14.93		1.62	1.00	0.398	pCi/L	109	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	87.6		40 - 110
Y Carrier	86.4		40 - 110

Lab Sample ID: 440-176655-Q-1-I MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.0865	U	13.8	15.26		1.65	1.00	0.457	pCi/L	111	45 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	87.3		40 - 110
Y Carrier	88.2		40 - 110

Lab Sample ID: 440-176655-Q-1-J MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.0865	U	13.7	13.87		1.52	1.00	0.417	pCi/L	101	45 - 150	0.44	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	87.6		40 - 110
Y Carrier	87.1		40 - 110

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 180-63329-A-7-B DU
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.365	U	0.1016	U	0.244	1.00	0.419	pCi/L	0.53	1

Carrier	%Yield	DU Qualifier	Limits
Ba Carrier	84.7		40 - 110
Y Carrier	88.6		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295123/1-A
Matrix: Water
Analysis Batch: 296638

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295123

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.1075	U	0.394	0.394	3.00	0.723	pCi/L	02/28/17 14:17	03/08/17 11:40	1

Carrier	%Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	74.9		40 - 110	02/28/17 14:17	03/08/17 11:40	1
Y Carrier	91.2		40 - 110	02/28/17 14:17	03/08/17 11:40	1

Lab Sample ID: LCS 160-295123/2-A
Matrix: Water
Analysis Batch: 296638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295123

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	16.52		1.73	3.00	0.576	pCi/L	97	75 - 125

Carrier	%Yield	LCS Qualifier	Limits
Sr Carrier	85.1		40 - 110
Y Carrier	96.1		40 - 110

Lab Sample ID: LCSD 160-295123/3-A
Matrix: Water
Analysis Batch: 296638

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 295123

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	17.0	18.50		1.93	3.00	0.658	pCi/L	109	75 - 125	0.54	1

Carrier	%Yield	LCSD Qualifier	Limits
Sr Carrier	76.8		40 - 110
Y Carrier	95.0		40 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-296618/1-A
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296618

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-79.73	U	168	169	500	314	pCi/L	03/08/17 12:29	03/08/17 16:29	1

Lab Sample ID: LCS 160-296618/2-A
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296618

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2950	2775		423	500	306	pCi/L	94	74 - 114

Lab Sample ID: 440-176655-M-1-B MS
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296618

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-98.2	U	2950	2590		412	500	318	pCi/L	88	67 - 130

Lab Sample ID: 440-176655-M-1-C MSD
Matrix: Water
Analysis Batch: 296794

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296618

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-98.2	U	2950	2590		410	500	313	pCi/L	88	67 - 130	0	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	91.4		30 - 110	02/21/17 13:19	02/24/17 17:20	1

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

	LCS	LCS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	85.9		30 - 110

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146	
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	88.1		30 - 110

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146	0.01	1	
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1	

	MSD	MSD	
Tracer	%Yield	Qualifier	Limits
Uranium-232	87.1		30 - 110

Lab Sample ID: 440-175840-G-1-G MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146	
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	96.2		30 - 110

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1	
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1	

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Tracer	MSD %Yield	MSD Qualifier	Limits
Uranium-232	82.1		30 - 110

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146	
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143	

Tracer	MS %Yield	MS Qualifier	Limits
Uranium-232	66.9		30 - 110

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	Limit
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1	
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1	

Tracer	MSD %Yield	MSD Qualifier	Limits
Uranium-232	85.0		30 - 110

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Rad

Prep Batch: 292601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-292601/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-292601/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-176654-Q-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	PrecSep-21	
MB 160-292779/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292779/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-176655-Q-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-176655-Q-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	
180-63329-A-7-A DU	Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 292818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	PrecSep_0	
MB 160-292818/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292818/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-176655-Q-1-I MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-176655-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	
180-63329-A-7-B DU	Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 295123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	PrecSep-7	
MB 160-295123/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295123/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
LCSD 160-295123/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-7	

Prep Batch: 295726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	Evaporation	
MB 160-295726/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-295726/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-295726/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-175840-G-1-N MS	Matrix Spike	Total/NA	Water	Evaporation	
440-175840-G-1-O MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-175840-G-1-P MSBT	Matrix Spike	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Rad (Continued)

Prep Batch: 295726 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175840-G-1-Q MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 296618

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-296618/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-296618/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-176655-M-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-176655-M-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

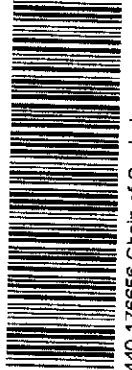
Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

440-1710050



CHAIN OF CUSTODY FORM

Test America

Client Name/Address:
Haley & Aldrich
5333 Mission Center Rd Suite 300
San Diego, CA 92108

Project:
Boeing-SSFL NPDES
Permit 2017
Routine Outfall 003-007, 009, 010
Outfall 009
Comp

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Project Manager: Katherine Miller
520.289.8606, 520.904.6944 (cell)

Field Manager: Mark Dominick
818.350.7312, 818.598.0702 (cell)

Test America's services under this CoC shall be performed in accordance with the TACs with Bureau Service Agreement 2015-18, TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.

Sampler: *Jeffrey Mueller*

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Comments
Outfall009_20170212_Comp		2/12/2017 <i>10:45</i>	WM	500 mL Poly	1	HNO ₃	95	No	
			WM	1 L Glass Amber	2	None	110	No	
			WM	500 mL Poly	2	None	145	No	
			WM	500 mL Poly	1	None	155	No	
			WM	500 mL Poly	1	NaOH	220	No	
			WM	2.5 Gall Cube	1	None	225	No	
			WM	1 L Glass Amber	1	None	230	No	
			WM	3 Gall Cube	1	None	235	No	<i>Not collected</i>
			WM	benzene/cistern	1	None	245	No	<i>Collect from Metals bottle</i>
Outfall009_20170212_Comp_F		2/12/2017 <i>10:45</i>	WM	1L Poly	1	None	205	No	
			WM	borellitate vials	1	None	320	No	
Outfall009_20170212_Comp_Extra		2/12/2017 <i>10:45</i>	WM	1 L Glass Amber	2	None	110	No	
			WM	500 mL Poly	2	None	145	No	

Analysis:
Total Recoverable Metals: Mercury (E245.1) X
Total Dissolved Metals: Mercury (E245.1) X
Chrom Toxicy - Selenium (EPA-821-R-02-013) X
Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0 or E904.1) X
Gross Alpha (E900.0), Gross Beta (E905.0), Total Tritium (T-3) (E908.0), Sr-90 (E905.0), Total (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Ti X
Total Dissolved Metals: (E200.7): Ag, Cd, Cu, Pb, Sb, Se, Ti X
TDS (SM2540C/E160.1) X
CR, SO₄, NO₃-NO₂-N (300) X
TCDD (and all congeners) (E1613B) X

Comments:
Unfiltered and unpreserved analysis. Separate RAD onto another workorder.
Analyze duplicate, not MSM/SD.
Only test if first or second rain events of the year.
Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Filter and preserve win 24hrs of receipt at lab.
Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
Hold
Hold

Turn-around time (Check):
24 Hour: 72 Hour: 10 Day: X
48 Hour: 5 Day: Normal:

Sample Integrity (Check):
Intact: On Ice:
Date Requirements: (Check)
No Level IV: All Level IV: X

03/04
04/07 56554



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176656-2

Login Number: 176656

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176656-2

Login Number: 176656

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/14/17 12:52 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.0,2.5,1.2,0.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
180-63329-A-7-A DU	Duplicate	84.7
440-176655-Q-1-C MS	Matrix Spike	87.3
440-176655-Q-1-D MSD	Matrix Spike Duplicate	87.6
440-176656-1	Outfall009_20170212_Comp	85.3
LCS 160-292779/2-A	Lab Control Sample	87.6
MB 160-292779/1-A	Method Blank	84.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
180-63329-A-7-B DU	Duplicate	84.7	88.6
440-176655-Q-1-I MS	Matrix Spike	87.3	88.2
440-176655-Q-1-J MSD	Matrix Spike Duplicate	87.6	87.1
440-176656-1	Outfall009_20170212_Comp	85.3	89.3
LCS 160-292818/2-A	Lab Control Sample	87.6	86.4
MB 160-292818/1-A	Method Blank	84.7	90.1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-176656-1	Outfall009_20170212_Comp	81.3	95.0
LCS 160-295123/2-A	Lab Control Sample	85.1	96.1
LCSD 160-295123/3-A	Lab Control Sample Dup	76.8	95.0
MB 160-295123/1-A	Method Blank	74.9	91.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-E MS	Matrix Spike	88.1
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175840-G-1-G MS	Matrix Spike	96.2
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
440-176656-1	Outfall009_20170212_Comp	92.6
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176656-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 9, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-176656-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170212_ Comp	440-176656-1	N/A	Water	2/12/17 9:05 AM	E200.8
Outfall009_20170212_ Comp_F	440-176656-2	N/A	Water	2/12/17 9:05 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176656-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections/strike-throughs on the original COC were not initialed and dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHOD 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 9, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample from this SDG. Accuracy was evaluated based upon LCS results.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified. The sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.



IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401766564

Analysis Method E200.8

Sample Name Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall009_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	U	
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176656-4

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/8/2017 6:25:27 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/8/2017 6:25:27 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176656-1	Outfall009_20170212_Comp	Water	02/12/17 09:05	02/13/17 06:30
440-176656-2	Outfall009_20170212_Comp_F	Water	02/12/17 09:05	02/13/17 06:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Job ID: 440-176656-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176656-4

Comments

200.7 Metals analyzed by 200.8 with 200.7 RLs.

Receipt

The samples were received on 2/13/2017 6:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 0.7° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/20/17 10:20	02/22/17 16:53	1
Zinc	ND		20	10	ug/L		02/20/17 10:20	02/22/17 16:53	1

Client Sample ID: Outfall009_20170212_Comp_F

Lab Sample ID: 440-176656-2

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	QP	10	5.0	ug/L		02/20/17 12:09	03/02/17 21:27	1
Zinc	ND	QP	20	10	ug/L		02/20/17 12:09	03/02/17 21:27	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Client Sample ID: Outfall009_20170212_Comp

Lab Sample ID: 440-176656-1

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	389269	02/20/17 10:20	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			389969	02/22/17 16:53	RC	TAL IRV

Client Sample ID: Outfall009_20170212_Comp_F

Lab Sample ID: 440-176656-2

Date Collected: 02/12/17 09:05

Matrix: Water

Date Received: 02/13/17 06:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	389307	02/20/17 12:09	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			392284	03/02/17 21:27	IH1	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/20/17 10:20	02/22/17 16:37	1
Zinc	ND		20	10	ug/L		02/20/17 10:20	02/22/17 16:37	1

Lab Sample ID: LCS 440-389269/2-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	79.7		ug/L		100	85 - 115
Zinc	80.0	78.4		ug/L		98	85 - 115

Lab Sample ID: 440-176655-A-1-E MS
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	ND		80.0	78.2		ug/L		98	70 - 130
Zinc	ND		80.0	82.4		ug/L		103	70 - 130

Lab Sample ID: 440-176655-A-1-F MSD
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Nickel	ND		80.0	77.2		ug/L		97	70 - 130	1	20
Zinc	ND		80.0	79.9		ug/L		100	70 - 130	3	20

Lab Sample ID: MB 440-388058/1-D
Matrix: Water
Analysis Batch: 392284

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389307

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/20/17 12:09	03/02/17 21:22	1
Zinc	ND		20	10	ug/L		02/20/17 12:09	03/02/17 21:22	1

Lab Sample ID: LCS 440-388058/2-D
Matrix: Water
Analysis Batch: 392284

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 389307

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	80.0	83.4		ug/L		104	85 - 115
Zinc	80.0	82.0		ug/L		103	85 - 115

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Metals

Filtration Batch: 388058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388058/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388058/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	

Prep Batch: 389269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total Recoverable	Water	200.2	
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 389307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	200.2	388058
MB 440-388058/1-D	Method Blank	Dissolved	Water	200.2	388058
LCS 440-388058/2-D	Lab Control Sample	Dissolved	Water	200.2	388058

Analysis Batch: 389969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-1	Outfall009_20170212_Comp	Total Recoverable	Water	200.8	389269
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.8	389269
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389269
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	389269
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	389269

Analysis Batch: 392284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176656-2	Outfall009_20170212_Comp_F	Dissolved	Water	200.8	389307
MB 440-388058/1-D	Method Blank	Dissolved	Water	200.8	389307
LCS 440-388058/2-D	Lab Control Sample	Dissolved	Water	200.8	389307

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-176656-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176656-4

Login Number: 176656

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177319-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177319-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170217_Grab	440-177319-1	N/A	Water	2/17/17 8:50 AM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177319-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 1664A - HEXANE EXTRACTABLE MATERIAL (OIL AND GREASE)

Marcia Hilchey of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after the first HEM weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was ≤11%.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773191

Analysis Method *E1664*

Sample Name Outfall009_20170217_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 8:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-177319-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.3	1.5	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177319-1

Client Project/Site: Routine Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/27/2017 9:03:29 PM

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/27/2017 9:03:29 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177319-1	Outfall009_20170217_Grab	Water	02/17/17 08:50	02/17/17 19:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Job ID: 440-177319-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177319-1

Comments

No additional comments.

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.1° C.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390456 and analytical batch 440-390532. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Client Sample ID: Outfall009_20170217_Grab

Lab Sample ID: 440-177319-1

Date Collected: 02/17/17 08:50

Matrix: Water

Date Received: 02/17/17 19:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		02/24/17 15:25	02/25/17 05:04	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Client Sample ID: Outfall009_20170217_Grab

Lab Sample ID: 440-177319-1

Date Collected: 02/17/17 08:50

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			950 mL	1000 mL	390456	02/24/17 15:25	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390532	02/25/17 05:04	BAW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390456/1-A
 Matrix: Water
 Analysis Batch: 390532

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 390456

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/24/17 15:25	02/25/17 05:04	1

Lab Sample ID: LCS 440-390456/2-A
 Matrix: Water
 Analysis Batch: 390532

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 390456

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	35.4		mg/L		89	78 - 114

Lab Sample ID: LCSD 440-390456/3-A
 Matrix: Water
 Analysis Batch: 390532

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 390456

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.3		mg/L		91	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

General Chemistry

Prep Batch: 390456

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177319-1	Outfall009_20170217_Grab	Total/NA	Water	1664A	
MB 440-390456/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390456/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390456/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177319-1	Outfall009_20170217_Grab	Total/NA	Water	1664A	390456
MB 440-390456/1-A	Method Blank	Total/NA	Water	1664A	390456
LCS 440-390456/2-A	Lab Control Sample	Total/NA	Water	1664A	390456
LCSD 440-390456/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390456

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-177319-1

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177319-1

Login Number: 177319

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177393-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-177393-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170218_Comp	440-177393-1	N/A	Water	2/18/17 9:10 AM	E1613B, E200.8, E245.1, E300, SM2540C, SM4500- CN-E
Outfall009_20170218_Comp_F	440-177393-2	N/A	Water	2/18/17 9:10 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177393-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- The case narrative noted the number of sample containers (three) provided for Outfall009_20170218_Comp_Extra did not match the COC.

The following issue was noted:

- The corrections on the original COC were not initialed and dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except TCDD and TCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result above the reporting limit. The reviewer verified that peaks comprising totals HpCDD and PeCDF in the method blank were the same peaks comprising the totals in sample Outfall009_20170218_Comp. The



results for totals HpCDD and PeCDF were qualified as nondetected (U) at the level of contamination. The reviewer verified that peaks comprising the results for totals HxCDD, HxCDF, and HpCDF in the sample included more peaks than the method blank total. The sample results for totals HxCDD, HxCDF, and HpCDF were therefore qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. As 2,3,7,8-TCDF was not detected in the initial analysis of the sample, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals PeCDD and TCDD were also qualified as estimated nondetects (UJ) as both consisted only of isomers also qualified as nondetects. Totals HpCDF, HxCDD, and HxCDF containing EMPC peaks were qualified as estimated (J).

IV. EPA METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 1, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall009_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals and dissolved mercury from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall009_20170218_Comp_F for mercury. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and the RPD were within the method control limits of 70-130% and $\leq 20\%$, respectively. The remaining metals and mercury were assessed for accuracy based upon LSC results.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.



IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 300.0, Standard Methods for the Examination of Water and Wastewater 2540C and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride, and sulfate

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory.



V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.

V.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773931

Analysis Method E1613B

Sample Name Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000029	0.00010	0.0000013	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00056	0.00010	0.0000024	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000014	0.000050	0.0000011	ug/L	J,DXqMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000049	0.000050	0.0000012	ug/L	J,DXqMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000050	0.0000014	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000018	0.000050	0.00000052	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000098	0.000050	0.00000063	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000012	0.000050	0.00000050	ug/L	J,DXqMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000029	0.000050	0.00000068	ug/L	J,DXq	UJ	*III
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000084	0.000050	0.00000051	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000022	0.000050	0.00000056	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.0000012	0.000050	0.00000050	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.0000014	0.000050	0.00000084	ug/L	J,DXq	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000013	0.000050	0.00000043	ug/L	J,DXqMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000050	0.00000050	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.00000031	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000089	0.000010	0.00000047	ug/L	J,DXq	UJ	*III
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000031	0.000050	0.0000012	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00011	0.000050	0.0000012	ug/L	qMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000014	0.000050	0.00000049	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000013	0.000050	0.00000062	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000012	0.000050	0.00000050	ug/L	J,DXqMB	U	B

Analysis Method E1613B

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000014	0.000050	0.00000084	ug/L	J,DXq	UJ	*III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.000010	0.00000031	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000089	0.000010	0.00000047	ug/L	J,DXq	UJ	*III

Analysis Method E200.8

Sample Name Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	1.6	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	4.8	2.0	0.50	ug/L			
Lead	T	7439-92-1	9.5	1.0	0.50	ug/L			
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	20	20	10	ug/L			

Sample Name Outfall009_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.98	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.7	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	0.96	1.0	0.50	ug/L	J,DXQP	J	DNQ, H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E245.1**Sample Name** Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 9:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall009_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 9:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177393-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 9:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.1	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	0.97	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	3.0	0.50	0.25	mg/L			

Analysis Method SM2540C**Sample Name** Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 9:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	82	10	5.0	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 9:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177393-1

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 4:33:58 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 4:33:58 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177393-1	Outfall009_20170218_Comp	Water	02/18/17 09:10	02/18/17 18:40
440-177393-2	Outfall009_20170218_Comp_F	Water	02/18/17 09:10	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Job ID: 440-177393-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177393-1

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.2° C and 2.5° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall009_20170218_Comp_Extra (440-177393-3). received #3 not listed on coc.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Chloride and Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389086 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.1		0.50	0.25	mg/L			02/18/17 21:34	1
Sulfate	3.0		0.50	0.25	mg/L			02/18/17 21:34	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.97		0.15	0.070	mg/L			03/01/17 12:39	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.0000089	J,DX q	0.000010	0.000004	ug/L		02/27/17 08:20	03/01/17 04:57	1
2,3,7,8-TCDF	ND		0.000010	0.000003	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,7,8-PeCDD	0.0000014	J,DX q	0.000050	0.000008	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,7,8-PeCDF	0.0000012	J,DX q MB	0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
2,3,4,7,8-PeCDF	ND		0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,4,7,8-HxCDD	0.0000098	J,DX q	0.000050	0.000006	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,6,7,8-HxCDD	0.0000029	J,DX q	0.000050	0.000006	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,7,8,9-HxCDD	0.0000022	J,DX	0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,4,7,8-HxCDF	0.0000018	J,DX q	0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,6,7,8-HxCDF	0.0000012	J,DX q MB	0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,7,8,9-HxCDF	0.0000084	J,DX q MB	0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
2,3,4,6,7,8-HxCDF	0.0000013	J,DX q MB	0.000050	0.000004	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,4,6,7,8-HpCDD	0.000049	J,DX q MB	0.000050	0.000012	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,4,6,7,8-HpCDF	0.000014	J,DX q MB	0.000050	0.000011	ug/L		02/27/17 08:20	03/01/17 04:57	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.000014	ug/L		02/27/17 08:20	03/01/17 04:57	1
OCDD	0.00056	MB	0.00010	0.000024	ug/L		02/27/17 08:20	03/01/17 04:57	1
OCDF	0.000029	J,DX MB	0.00010	0.000013	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total TCDD	0.0000089	J,DX q	0.000010	0.000004	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total TCDF	ND		0.000010	0.000003	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total PeCDD	0.0000014	J,DX q	0.000050	0.000008	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total PeCDF	0.0000012	J,DX q MB	0.000050	0.000005	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total HxCDD	0.000013	J,DX q MB	0.000050	0.000006	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total HxCDF	0.000014	J,DX q MB	0.000050	0.000004	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total HpCDD	0.00011	q MB	0.000050	0.000012	ug/L		02/27/17 08:20	03/01/17 04:57	1
Total HpCDF	0.000031	J,DX q MB	0.000050	0.000012	ug/L		02/27/17 08:20	03/01/17 04:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	58		25 - 164				02/27/17 08:20	03/01/17 04:57	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,7,8-PeCDD	45		25 - 181	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,7,8-PeCDF	49		24 - 185	02/27/17 08:20	03/01/17 04:57	1
13C-2,3,4,7,8-PeCDF	55		21 - 178	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,4,7,8-HxCDD	82		32 - 141	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,6,7,8-HxCDD	66		28 - 130	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,6,7,8-HxCDF	67		26 - 123	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,7,8,9-HxCDF	57		29 - 147	02/27/17 08:20	03/01/17 04:57	1
13C-2,3,4,6,7,8-HxCDF	68		28 - 136	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,4,6,7,8-HpCDF	57		28 - 143	02/27/17 08:20	03/01/17 04:57	1
13C-1,2,3,4,7,8,9-HpCDF	60		26 - 138	02/27/17 08:20	03/01/17 04:57	1
13C-OCDD	45		17 - 157	02/27/17 08:20	03/01/17 04:57	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	82		35 - 197	02/27/17 08:20	03/01/17 04:57	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:14	1
Cadmium	ND		1.0	0.25	ug/L		02/24/17 10:57	02/25/17 14:14	1
Copper	4.8		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:14	1
Lead	9.5		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:14	1
Antimony	1.6	J,DX	2.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:14	1
Selenium	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:14	1
Thallium	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 14:14	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 20:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	82		10	5.0	mg/L			02/23/17 08:39	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Client Sample ID: Outfall009_20170218_Comp_F

Lab Sample ID: 440-177393-2

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:19	1
Cadmium	ND	QP	1.0	0.25	ug/L		02/23/17 10:47	02/25/17 15:19	1
Copper	2.7	QP	2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:19	1
Lead	0.96	J,DX QP	1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:19	1
Antimony	0.98	J,DX QP	2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:19	1
Selenium	ND	QP	2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:19	1
Thallium	ND	QP	1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:19	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Client Sample ID: Outfall009_20170218_Comp_F

Lab Sample ID: 440-177393-2

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/27/17 19:52	02/28/17 20:31	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389086	02/18/17 21:34	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391349	03/01/17 12:39	TLN	TAL IRV
Total/NA	Prep	1613B			996.3 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B		1			152750	03/01/17 04:57	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	390380	02/24/17 10:57	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			390606	02/25/17 14:14	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390895	02/27/17 20:12	DB	TAL IRV
Total/NA	Analysis	245.1		1			391252	02/28/17 20:23	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 17:59	SN	TAL IRV

Client Sample ID: Outfall009_20170218_Comp_F

Lab Sample ID: 440-177393-2

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389638	02/21/17 15:57	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390090	02/23/17 10:47	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390630	02/25/17 15:19	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389638	02/21/17 15:57	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390887	02/27/17 19:52	DB	TAL IRV
Dissolved	Analysis	245.1		1			391253	02/28/17 20:31	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389086/4
Matrix: Water
Analysis Batch: 389086

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/18/17 13:16	1
Sulfate	ND		0.50	0.25	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389086/2
Matrix: Water
Analysis Batch: 389086

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.75		mg/L		95	90 - 110
Sulfate	5.00	5.19		mg/L		104	90 - 110

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,7,8-TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDF	0.00000140	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDF	0.00000112	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,6,7,8-HxCDF	0.000000796	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDD	0.00000372	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDF	0.00000131	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDD	0.0000108	J,DX	0.00010	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDF	0.00000612	J,DX	0.00010	0.0000015	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDD	0.00000537	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDD	0.00000118	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDF	0.00000331	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDD	0.00000696	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDF	0.00000131	J,DX q	0.000050	0.0000012	ug/L		02/27/17 08:20	02/28/17 23:14	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	52		25 - 164				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,7,8-TCDF	53		24 - 169				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDD	39		25 - 181				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDF	45		24 - 185				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,7,8-PeCDF	49		21 - 178				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147				02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143				02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138				02/27/17 08:20	02/28/17 23:14	1
13C-OCDD	35		17 - 157				02/27/17 08:20	02/28/17 23:14	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197				02/27/17 08:20	02/28/17 23:14	1

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000223		ug/L		111	67 - 158
2,3,7,8-TCDF	0.000200	0.000193		ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00120		ug/L		120	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00101		ug/L		101	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100		ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922		ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000968		ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-152230/2-A

Matrix: Water

Analysis Batch: 152750

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00118	MB	ug/L		118	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000993	MB	ug/L		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000998		ug/L		100	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-1,2,3,7,8-PeCDD	48		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-OCDD	55		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-152230/3-A

Matrix: Water

Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000235		ug/L		117	67 - 158	5	50
2,3,7,8-TCDF	0.000200	0.000211		ug/L		106	75 - 158	9	50
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	0	50
1,2,3,7,8-PeCDF	0.00100	0.00114	MB	ug/L		114	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000949		ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000959		ug/L		96	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000950		ug/L		95	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106	MB	ug/L		106	78 - 130	1	50
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156	0	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00116	MB	ug/L		116	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122	9	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939		ug/L		94	78 - 138	6	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152230/3-A

Matrix: Water

Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
OCDD	0.00200	0.00209	MB	ug/L		104	78 - 144	4	50
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	9	50
		LCSD %Recovery	LCSD Qualifier			Limits			
<i>Isotope Dilution</i>									
13C-2,3,7,8-TCDD		51					20 - 175		
13C-2,3,7,8-TCDF		51					22 - 152		
13C-1,2,3,7,8-PeCDD		40					21 - 227		
13C-1,2,3,7,8-PeCDF		44					21 - 192		
13C-2,3,4,7,8-PeCDF		50					13 - 328		
13C-1,2,3,4,7,8-HxCDD		62					21 - 193		
13C-1,2,3,6,7,8-HxCDD		52					25 - 163		
13C-1,2,3,4,7,8-HxCDF		57					19 - 202		
13C-1,2,3,6,7,8-HxCDF		53					21 - 159		
13C-1,2,3,7,8,9-HxCDF		46					17 - 205		
13C-2,3,4,6,7,8-HxCDF		52					22 - 176		
13C-1,2,3,4,6,7,8-HpCDD		41					26 - 166		
13C-1,2,3,4,6,7,8-HpCDF		47					21 - 158		
13C-1,2,3,4,7,8,9-HpCDF		50					20 - 186		
13C-OCDD		38					13 - 199		
		LCSD %Recovery	LCSD Qualifier			Limits			
<i>Surrogate</i>									
37Cl4-2,3,7,8-TCDD		87					31 - 191		

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-390380/1-A

Matrix: Water

Analysis Batch: 390606

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 390380

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Cadmium	ND		1.0	0.25	ug/L		02/24/17 10:57	02/25/17 13:50	1
Copper	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Lead	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Antimony	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Selenium	ND		2.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1
Thallium	ND		1.0	0.50	ug/L		02/24/17 10:57	02/25/17 13:50	1

Lab Sample ID: LCS 440-390380/2-A

Matrix: Water

Analysis Batch: 390606

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 390380

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	79.5		ug/L		99	85 - 115
Cadmium	80.0	78.5		ug/L		98	85 - 115
Copper	80.0	78.0		ug/L		97	85 - 115
Lead	80.0	75.7		ug/L		95	85 - 115
Antimony	80.0	80.4		ug/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-390380/2-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	80.0	78.3		ug/L		98	85 - 115
Thallium	80.0	79.7		ug/L		100	85 - 115

Lab Sample ID: 440-177805-A-1-E MS
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		80.0	75.4		ug/L		94	70 - 130
Cadmium	ND		80.0	72.3		ug/L		90	70 - 130
Copper	1.0	J,DX	80.0	74.6		ug/L		92	70 - 130
Lead	ND		80.0	71.1		ug/L		89	70 - 130
Antimony	1.0	J,DX	80.0	78.4		ug/L		97	70 - 130
Selenium	71		80.0	137		ug/L		82	70 - 130
Thallium	ND		80.0	75.2		ug/L		94	70 - 130

Lab Sample ID: 440-177805-A-1-F MSD
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	ND		80.0	89.1		ug/L		111	70 - 130	17	20
Cadmium	ND		80.0	84.9		ug/L		106	70 - 130	16	20
Copper	1.0	J,DX	80.0	86.6		ug/L		107	70 - 130	15	20
Lead	ND		80.0	82.6		ug/L		103	70 - 130	15	20
Antimony	1.0	J,DX	80.0	92.7		ug/L		115	70 - 130	17	20
Selenium	71		80.0	157		ug/L		108	70 - 130	14	20
Thallium	ND		80.0	87.1		ug/L		109	70 - 130	15	20

Lab Sample ID: MB 440-389638/1-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Cadmium	ND		1.0	0.25	ug/L		02/23/17 10:47	02/25/17 15:11	1
Copper	ND		2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Lead	ND		1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Antimony	ND		2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Selenium	ND		2.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1
Thallium	ND		1.0	0.50	ug/L		02/23/17 10:47	02/25/17 15:11	1

Lab Sample ID: LCS 440-389638/2-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	79.5		ug/L		99	85 - 115
Cadmium	80.0	78.3		ug/L		98	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-389638/2-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Copper	80.0	78.1		ug/L		98	85 - 115	
Lead	80.0	74.9		ug/L		94	85 - 115	
Antimony	80.0	79.6		ug/L		99	85 - 115	
Selenium	80.0	76.9		ug/L		96	85 - 115	
Thallium	80.0	78.7		ug/L		98	85 - 115	

Lab Sample ID: 440-177398-A-2-D MS
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
Silver	ND	QP	80.0	82.2		ug/L		103	70 - 130	
Cadmium	ND	QP	80.0	81.3		ug/L		102	70 - 130	
Copper	2.1	QP	80.0	84.2		ug/L		103	70 - 130	
Lead	ND	QP	80.0	78.0		ug/L		98	70 - 130	
Antimony	ND	QP	80.0	83.2		ug/L		104	70 - 130	
Selenium	ND	QP	80.0	79.7		ug/L		100	70 - 130	
Thallium	ND	QP	80.0	82.9		ug/L		104	70 - 130	

Lab Sample ID: 440-177398-A-2-E MSD
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD Limit	
											RPD	Limit
Silver	ND	QP	80.0	86.1		ug/L		108	70 - 130	5	20	
Cadmium	ND	QP	80.0	85.0		ug/L		106	70 - 130	4	20	
Copper	2.1	QP	80.0	86.4		ug/L		105	70 - 130	3	20	
Lead	ND	QP	80.0	80.6		ug/L		101	70 - 130	3	20	
Antimony	ND	QP	80.0	87.0		ug/L		109	70 - 130	4	20	
Selenium	ND	QP	80.0	82.2		ug/L		103	70 - 130	3	20	
Thallium	ND	QP	80.0	86.3		ug/L		108	70 - 130	4	20	

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390895/1-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390895

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

Lab Sample ID: LCS 440-390895/2-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Mercury	8.00	8.29		ug/L		104	85 - 115	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-177985-A-1-B MS
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.01		ug/L		100	70 - 130

Lab Sample ID: 440-177985-A-1-C MSD
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.26		ug/L		103	70 - 130	3	20

Lab Sample ID: MB 440-389638/1-G
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390887

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 19:52	02/28/17 20:25	1

Lab Sample ID: LCS 440-389638/2-G
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390887

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.60		ug/L		108	85 - 115

Lab Sample ID: 440-177393-2 MS
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Outfall009_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390887

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	QP	8.00	8.47		ug/L		106	70 - 130

Lab Sample ID: 440-177393-2 MSD
Matrix: Water
Analysis Batch: 391253

Client Sample ID: Outfall009_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390887

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	QP	8.00	8.52		ug/L		106	70 - 130	1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-390054/2

Matrix: Water

Analysis Batch: 390054

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177195-K-1 DU

Matrix: Water

Analysis Batch: 390054

Client Sample ID: Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	190		191		mg/L		0.5	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A

Matrix: Water

Analysis Batch: 389681

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A

Matrix: Water

Analysis Batch: 389681

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS

Matrix: Water

Analysis Batch: 389681

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD

Matrix: Water

Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

HPLC/IC

Analysis Batch: 389086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	300.0	
MB 440-389086/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389086/2	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 391349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	1613B	
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	1613B	152230
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	152230
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	152230
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152230

Metals

Filtration Batch: 389638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389638/1-D	Method Blank	Dissolved	Water	FILTRATION	
MB 440-389638/1-G	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-389638/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177393-2 MS	Outfall009_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177393-2 MSD	Outfall009_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177398-A-2-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177398-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	200.2	389638
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.2	389638
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.2	389638
440-177398-A-2-D MS	Matrix Spike	Dissolved	Water	200.2	389638
440-177398-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	389638

Prep Batch: 390380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.2	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Metals (Continued)

Prep Batch: 390380 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 390606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total Recoverable	Water	200.8	390380
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.8	390380
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.8	390380
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	390380
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	390380

Analysis Batch: 390630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	200.8	390090
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.8	390090
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.8	390090
440-177398-A-2-D MS	Matrix Spike	Dissolved	Water	200.8	390090
440-177398-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390090

Prep Batch: 390887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	245.1	389638
MB 440-389638/1-G	Method Blank	Dissolved	Water	245.1	389638
LCS 440-389638/2-G	Lab Control Sample	Dissolved	Water	245.1	389638
440-177393-2 MS	Outfall009_20170218_Comp_F	Dissolved	Water	245.1	389638
440-177393-2 MSD	Outfall009_20170218_Comp_F	Dissolved	Water	245.1	389638

Prep Batch: 390895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	245.1	
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 391252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	245.1	390895
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	390895
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	390895
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	390895
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	390895

Analysis Batch: 391253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	245.1	390887
MB 440-389638/1-G	Method Blank	Dissolved	Water	245.1	390887
LCS 440-389638/2-G	Lab Control Sample	Dissolved	Water	245.1	390887
440-177393-2 MS	Outfall009_20170218_Comp_F	Dissolved	Water	245.1	390887
440-177393-2 MSD	Outfall009_20170218_Comp_F	Dissolved	Water	245.1	390887

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

General Chemistry

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177195-K-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Chain of Custody Record



Client Information (Sub Contract Lab)		Company: TestAmerica Laboratories, Inc. 17175 Rider Trail North, Earth City, MO, 63045 Phone: (14-298-8566)(T) / (14-298-873)(F) (A) Email: info@testa.com	Client Name: (Boiling SPFL, SSFL, SSFL, SSFL) 14-298-8566(T) / (14-298-873)(F) (A)	Project # 44009679 SIC Code 350048	Sample ID (Lab ID) Dut04099_20170218_Comp (440-117205-1)	Sample Date 2/18/17	Sample Time 09:10 PHASE	Sample Type (Color) Preservation Code Water	Matrix (Swab, Urine, Blood, Saliva, etc.)	Analysis Requested 901.0, 902.0, 903.0, 904.0, 905.0, 906.0, 907.0, 908.0, 909.0, 910.0, 911.0, 912.0, 913.0, 914.0, 915.0, 916.0, 917.0, 918.0, 919.0, 920.0, 921.0, 922.0, 923.0, 924.0, 925.0, 926.0, 927.0, 928.0, 929.0, 930.0, 931.0, 932.0, 933.0, 934.0, 935.0, 936.0, 937.0, 938.0, 939.0, 940.0, 941.0, 942.0, 943.0, 944.0, 945.0, 946.0, 947.0, 948.0, 949.0, 950.0, 951.0, 952.0, 953.0, 954.0, 955.0, 956.0, 957.0, 958.0, 959.0, 960.0, 961.0, 962.0, 963.0, 964.0, 965.0, 966.0, 967.0, 968.0, 969.0, 970.0, 971.0, 972.0, 973.0, 974.0, 975.0, 976.0, 977.0, 978.0, 979.0, 980.0, 981.0, 982.0, 983.0, 984.0, 985.0, 986.0, 987.0, 988.0, 989.0, 990.0, 991.0, 992.0, 993.0, 994.0, 995.0, 996.0, 997.0, 998.0, 999.0, 1000.0	Total Number of Containers 2	Special Instructions/Notes: Boiling SPFL, DO NOT FILTER, use prep after four preservation
Client Information (Sub Contract Lab)		Company: TestAmerica Laboratories, Inc. 17175 Rider Trail North, Earth City, MO, 63045 Phone: (14-298-8566)(T) / (14-298-873)(F) (A) Email: info@testa.com	Client Name: (Boiling SPFL, SSFL, SSFL, SSFL) 14-298-8566(T) / (14-298-873)(F) (A)	Project # 44009679 SIC Code 350048	Sample ID (Lab ID) Dut04099_20170218_Comp (440-117205-1)	Sample Date 2/18/17	Sample Time 09:10 PHASE	Sample Type (Color) Preservation Code Water	Matrix (Swab, Urine, Blood, Saliva, etc.)	Analysis Requested 901.0, 902.0, 903.0, 904.0, 905.0, 906.0, 907.0, 908.0, 909.0, 910.0, 911.0, 912.0, 913.0, 914.0, 915.0, 916.0, 917.0, 918.0, 919.0, 920.0, 921.0, 922.0, 923.0, 924.0, 925.0, 926.0, 927.0, 928.0, 929.0, 930.0, 931.0, 932.0, 933.0, 934.0, 935.0, 936.0, 937.0, 938.0, 939.0, 940.0, 941.0, 942.0, 943.0, 944.0, 945.0, 946.0, 947.0, 948.0, 949.0, 950.0, 951.0, 952.0, 953.0, 954.0, 955.0, 956.0, 957.0, 958.0, 959.0, 960.0, 961.0, 962.0, 963.0, 964.0, 965.0, 966.0, 967.0, 968.0, 969.0, 970.0, 971.0, 972.0, 973.0, 974.0, 975.0, 976.0, 977.0, 978.0, 979.0, 980.0, 981.0, 982.0, 983.0, 984.0, 985.0, 986.0, 987.0, 988.0, 989.0, 990.0, 991.0, 992.0, 993.0, 994.0, 995.0, 996.0, 997.0, 998.0, 999.0, 1000.0	Total Number of Containers 2	Special Instructions/Notes: Boiling SPFL, DO NOT FILTER, use prep after four preservation

Available Hazard Identification
Unconfirmed
Determinate (Request 1, 2, 3, 4, Other (specify)) Primary Determinable (None 2)

Sample Kit Requisitioned by:
Requisitioned by: *V. B. Kelly*
Requisitioned by: *V. B. Kelly*
Requisitioned by: *V. B. Kelly*

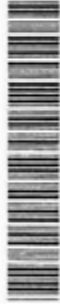
Chain of Custody:
Date/Time: 2/20/17 17:00
Signature: *V. B. Kelly*
Company: TestAmerica
Date/Time: 2/20/17 09:10
Signature: *[Signature]*
Company: TestAmerica

Chain of Custody:
Date/Time: 2/20/17 17:00
Signature: *V. B. Kelly*
Company: TestAmerica
Date/Time: 2/20/17 09:10
Signature: *[Signature]*
Company: TestAmerica

Chain of Custody:
Date/Time: 2/20/17 17:00
Signature: *V. B. Kelly*
Company: TestAmerica
Date/Time: 2/20/17 09:10
Signature: *[Signature]*
Company: TestAmerica



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Uravashi		Lab #/M: Uravashi		Carrier Tracking No(s):		COC No: 440-107787-1	
Client Contact:		Phone:		E-Mail: uravashi.patel@testamericainc.com		State of Origin: California		Page: Page 1 of 1	
Shipping/Receiving		Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #		440-177393-1	
Address: 880 Riverside Parkway,		Due Date Requested: 3/2/2017		Analysis Requested:		Preservation Codes:		M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDA Z - other (specify)	
City: West Sacramento		TAT Requested (days):		Perform MS/MSD (Yes or No):		Total Number of Containers:		Special Instructions/Note:	
State, Zip: CA, 95605		PO #:		Field Filtered Sample (Yes or No):		2		See OAS, Boiling_wiu to zero, ug/L, Use Boiling glassware.	
Phone: 916-373-5800(Tel) 916-372-1059(Fax)		WO #:		Matrix (W-water, S-serum, G-grab):					
Email:		Project #:		Sample Type (C=comp, G=grab):					
Boeing NPDES SSFL outfalls		44009879		Sample Time:		09:10 Pacific			
Site:		SSOWR		Sample Date:		2/18/17			
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W-water, S-serum, G-grab)	
Outfall009_20170218_Comp (440-177393-1)		2/18/17		09:10 Pacific				Water	
<p><i>rec'd by Uravashi #3 02-23-17</i></p>									
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>									
<p>Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/OC Requirements:</p>									
<p>Empty Kit Relinquished by: _____ Date: _____ Time: _____ Relinquished by: <i>Va Banh</i> Date/Time: <i>2/20/17 17:00</i> Company: <i>TAT</i> Relinquished by: <i>Va Banh</i> Date/Time: <i>2/20/17 17:00</i> Company: <i>TAT</i> Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: <i>0.8 p.p.A</i></p>									



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177393-1

Login Number: 177393

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177393-1

Login Number: 177393

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:55 PM

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-177393-1	Outfall009_20170218_Comp	58	57	45	49	55	82	66	73
MB 320-152230/1-A	Method Blank	52	53	39	45	49	58	54	58

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-177393-1	Outfall009_20170218_Comp	67	57	68	54	57	60	45
MB 320-152230/1-A	Method Blank	53	49	57	40	48	47	35

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152230/2-A	Lab Control Sample	62	63	48	53	59	75	71	70
LCSD 320-152230/3-A	Lab Control Sample Dup	51	51	40	44	50	62	52	57

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152230/2-A	Lab Control Sample	63	59	66	54	66	63	55
LCSD 320-152230/3-A	Lab Control Sample Dup	53	46	52	41	47	50	38

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177393-2

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 8:53:18 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 8:53:18 PM

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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177393-1	Outfall009_20170218_Comp	Water	02/18/17 09:10	02/18/17 18:40

- 1
- 2
- 3
- 4
- 5
- 6
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- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Job ID: 440-177393-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177393-2

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.2° C and 2.5° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall009_20170218_Comp_Extra (440-177393-3). received #3 not listed on coc.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall009_20170218_Comp (440-177393-1)

Method(s) PrecSep_0: Radium 228; Prep Batch 294407

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294407. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-21: Radium 226; Prep Batch 294401

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294401. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: During the barium clean up portion of the into in-growth process a deviation occurred, whereas, following the addition of 10 milliliters sodium sulfate and m-cresol purple, 5 milliliters of sodium chromate was added before the addition of sodium hydroxide. To correct this mistake, three milliliters of sodium hydroxide was added as well as about 1.5 milliliters of sodium chromate. Barium pellets formed in all samples and were moved into in-growth. Outfall009_20170218_Comp (440-177393-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.18		1.04	1.07	3.00	1.37	pCi/L	03/13/17 10:59	03/19/17 20:24	1
Gross Beta	3.35		0.821	0.887	4.00	0.974	pCi/L	03/13/17 10:59	03/19/17 20:24	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.975	U	8.97	8.97	20.0	15.7	pCi/L	02/23/17 14:59	02/27/17 22:28	1
Potassium-40	-12.0	U	176	176		216	pCi/L	02/23/17 14:59	02/27/17 22:28	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.124	U	0.0904	0.0910	1.00	0.128	pCi/L	02/24/17 10:49	03/20/17 20:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	76.7		40 - 110					02/24/17 10:49	03/20/17 20:29	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.590		0.314	0.318	1.00	0.464	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	76.7		40 - 110					02/24/17 11:31	03/11/17 14:43	1
Y Carrier	83.7		40 - 110					02/24/17 11:31	03/11/17 14:43	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.292		0.186	0.188	3.00	0.284	pCi/L	03/03/17 14:30	03/13/17 10:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.2		40 - 110					03/03/17 14:30	03/13/17 10:32	1
Y Carrier	95.0		40 - 110					03/03/17 14:30	03/13/17 10:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-24.8	U	156	156	500	286	pCi/L	03/17/17 10:22	03/17/17 20:34	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.195	U	0.172	0.172	1.00	0.199	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	88.9		30 - 110					03/09/17 12:44	03/16/17 23:27	1

- 1
- 2
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- 5
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- 10
- 11
- 12
- 13
- 14

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/13/17 10:59	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:24	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294726	02/27/17 22:28	RTM	TAL SL
Total/NA	Prep	PrecSep-21			1000.00 mL	1.0 g	294401	02/24/17 10:49	PJM	TAL SL
Total/NA	Analysis	903.0		1			298257	03/20/17 20:29	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.00 mL	1.0 g	294407	02/24/17 11:31	PJM	TAL SL
Total/NA	Analysis	904.0		1			297297	03/11/17 14:43	RTM	TAL SL
Total/NA	Prep	PrecSep-7			999.99 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:32	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 20:34	ALD	TAL SL
Total/NA	Prep	ExtChrom			499.76 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298150	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
						Uncert. (2σ+/-)							
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294401/1-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294401

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1011		0.0693	0.0699	1.00	0.0920	pCi/L	02/24/17 10:49	03/20/17 20:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					02/24/17 10:49	03/20/17 20:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294401/2-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.72		1.12	1.00	0.112	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	89.7		40 - 110							

Lab Sample ID: LCSD 160-294401/3-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	11.08		1.15	1.00	0.0841	pCi/L	98	68 - 137	0.16	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294407/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294407

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03249	U	0.238	0.238	1.00	0.431	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	86.7		40 - 110			02/24/17 11:31	03/11/17 14:43	1		
Y Carrier	83.7		40 - 110			02/24/17 11:31	03/11/17 14:43	1		

Lab Sample ID: LCS 160-294407/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	13.59		1.49	1.00	0.394	pCi/L	99	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	89.7		40 - 110						
Y Carrier	86.4		40 - 110						

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-294407/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.7	13.97		1.51	1.00	0.370	pCi/L	102	56 - 140	0.13	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	90.9		40 - 110
Y Carrier	87.5		40 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110	03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110	03/03/17 14:30	03/13/17 10:31	1

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Sr Carrier	88.0		40 - 110
Y Carrier	100		40 - 110

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Sr Carrier	80.3		40 - 110
Y Carrier	104		40 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
Carrier	%Yield	MSD Qualifier	MSD Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	MB MB		Limits			Prepared	Analyzed	Dil Fac		
%Yield	Qualifier									
Uranium-232	73.2		30 - 110			03/09/17 12:44	03/16/17 23:27	1		

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
%Yield	Qualifier								
Uranium-232	89.4		30 - 110						

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143
Tracer	MS MS		Limits			Prepared	Analyzed	Dil Fac			
%Yield	Qualifier										
Uranium-232	63.1		30 - 110								

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1
Tracer	MSD MSD		Limits			Prepared	Analyzed	Dil Fac					
%Yield	Qualifier												
Uranium-232	81.8		30 - 110										

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-G MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	74.3		30 - 110								

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	89.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Rad

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 294401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294401/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294401/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-294401/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 294407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294407/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294407/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-294407/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSE 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Rad (Continued)

Prep Batch: 298177 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177393-2

Login Number: 177393

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177393-2

Login Number: 177393

List Number: 2

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/22/17 01:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-177393-1	Outfall009_20170218_Comp	76.7
LCS 160-294401/2-A	Lab Control Sample	89.7
LCSD 160-294401/3-A	Lab Control Sample Dup	90.9
MB 160-294401/1-A	Method Blank	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-177393-1	Outfall009_20170218_Comp	76.7	83.7
LCS 160-294407/2-A	Lab Control Sample	89.7	86.4
LCSD 160-294407/3-A	Lab Control Sample Dup	90.9	87.5
MB 160-294407/1-A	Method Blank	86.7	83.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-177393-1	Outfall009_20170218_Comp	80.2	95.0
440-177394-A-1-I MS	Matrix Spike	80.3	104
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177393-1	Outfall009_20170218_Comp	88.9
440-177394-A-1-L MS	Matrix Spike	63.1
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177393-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 13, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177393-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170218_ Comp	440-177393-1	N/A	Water	2/18/2017 9:10:00 AM	E200.8
Outfall009_20170218_ Comp_F	440-177393-2	N/A	Water	2/18/2017 9:10:00 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177393-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHOD 200.8— METALS

Marcia Hilchey of MEC^x reviewed the SDG on April 10, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall009_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. The results for dissolved zinc and dissolved nickel were qualified as estimated (UJ).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for CRQLs; this review is based on CRQL summary data only.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and method blanks; this review is based on blank summary data only.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA; this review is based on ICSA summary data only.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG. Accuracy was assessed based upon LCS results.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.



IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773934

Analysis Method *E200.8*

Sample Name Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	20	20	10	ug/L			

Sample Name Outfall009_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177393-4

Client Project/Site: Routine Outfall 009 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 4:55:20 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 4:55:20 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177393-1	Outfall009_20170218_Comp	Water	02/18/17 09:10	02/18/17 18:40
440-177393-2	Outfall009_20170218_Comp_F	Water	02/18/17 09:10	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Job ID: 440-177393-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177393-4

Comments

200.7 metals analyzed with 200.8 method with 200.7 RLs

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.2° C and 2.5° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC):
Outfall009_20170218_Comp_Extra (440-177393-3). received #3 not listed on coc.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/24/17 10:57	02/25/17 14:14	1
Zinc	20		20	10	ug/L		02/24/17 10:57	02/25/17 14:14	1

Client Sample ID: Outfall009_20170218_Comp_F

Lab Sample ID: 440-177393-2

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND	QP	10	5.0	ug/L		02/23/17 10:47	02/25/17 15:19	1
Zinc	ND	QP	20	10	ug/L		02/23/17 10:47	02/25/17 15:19	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Client Sample ID: Outfall009_20170218_Comp

Lab Sample ID: 440-177393-1

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	390380	02/24/17 10:57	JL	TAL IRV
Total Recoverable	Analysis	200.8		1			390606	02/25/17 14:14	RC	TAL IRV

Client Sample ID: Outfall009_20170218_Comp_F

Lab Sample ID: 440-177393-2

Date Collected: 02/18/17 09:10

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389638	02/21/17 15:57	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390090	02/23/17 10:47	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390630	02/25/17 15:19	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-390380/1-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/24/17 10:57	02/25/17 13:50	1
Zinc	ND		20	10	ug/L		02/24/17 10:57	02/25/17 13:50	1

Lab Sample ID: LCS 440-390380/2-A
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	80.0	76.5		ug/L		96	85 - 115
Zinc	80.0	77.8		ug/L		97	85 - 115

Lab Sample ID: 440-177805-A-1-E MS
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND		80.0	75.7		ug/L		95	70 - 130
Zinc	15	J,DX	80.0	78.4		ug/L		79	70 - 130

Lab Sample ID: 440-177805-A-1-F MSD
Matrix: Water
Analysis Batch: 390606

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 390380

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND		80.0	86.7		ug/L		108	70 - 130	14	20
Zinc	15	J,DX	80.0	90.9		ug/L		94	70 - 130	15	20

Lab Sample ID: MB 440-389638/1-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	ND		10	5.0	ug/L		02/23/17 10:47	02/25/17 15:11	1
Zinc	ND		20	10	ug/L		02/23/17 10:47	02/25/17 15:11	1

Lab Sample ID: LCS 440-389638/2-D
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nickel	80.0	77.2		ug/L		96	85 - 115
Zinc	80.0	75.6		ug/L		94	85 - 115

Lab Sample ID: 440-177398-A-2-D MS
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Nickel	ND	QP	80.0	81.2		ug/L		101	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-177398-A-2-D MS
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	ND	QP	80.0	80.4		ug/L		100	70 - 130

Lab Sample ID: 440-177398-A-2-E MSD
Matrix: Water
Analysis Batch: 390630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390090

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nickel	ND	QP	80.0	83.3		ug/L		104	70 - 130	3	20
Zinc	ND	QP	80.0	83.0		ug/L		104	70 - 130	3	20



QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Metals

Filtration Batch: 389638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389638/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177398-A-2-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177398-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	200.2	389638
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.2	389638
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.2	389638
440-177398-A-2-D MS	Matrix Spike	Dissolved	Water	200.2	389638
440-177398-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	389638

Prep Batch: 390380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 390606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-1	Outfall009_20170218_Comp	Total Recoverable	Water	200.8	390380
MB 440-390380/1-A	Method Blank	Total Recoverable	Water	200.8	390380
LCS 440-390380/2-A	Lab Control Sample	Total Recoverable	Water	200.8	390380
440-177805-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	390380
440-177805-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	390380

Analysis Batch: 390630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177393-2	Outfall009_20170218_Comp_F	Dissolved	Water	200.8	390090
MB 440-389638/1-D	Method Blank	Dissolved	Water	200.8	390090
LCS 440-389638/2-D	Lab Control Sample	Dissolved	Water	200.8	390090
440-177398-A-2-D MS	Matrix Spike	Dissolved	Water	200.8	390090
440-177398-A-2-E MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390090

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Comp

TestAmerica Job ID: 440-177393-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177393-4

Login Number: 177393

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-178122-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 29, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-178122-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170226_ Grab	440-178122-1	N/A	Water	2/26/17 8:00 AM	E1664



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-178122-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 1664A - HEXANE EXTRACTABLE MATERIAL (OIL AND GREASE)

Marcia Hilchey of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 1664A* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time for n-hexane extractable material (HEM; oil and grease), 28 days from collection, was met.

III.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after sample weighing.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease).

III.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample and laboratory control sample duplicate recoveries for HEM were within the method control limits of 78-114% and the RPD was ≤11%.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in the SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401781221

Analysis Method *E1664*

Sample Name Outfall009_20170226_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/26/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178122-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.3	1.5	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178122-1

Client Project/Site: Routine Outfall 009 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 5:11:55 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 5:11:55 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178122-1	Outfall009_20170226_Grab	Water	02/26/17 08:00	02/27/17 07:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Job ID: 440-178122-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-178122-1**

Comments

No additional comments.

Receipt

The samples were received on 2/27/2017 7:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4° C, 1.8° C, 1.9° C and 2.3° C.

Organic Prep

Method(s) 1664A: Spike compounds were inadvertently omitted during the extraction process for the matrix spike/matrix spike duplicate (MS/MSD); therefore, matrix spike recoveries are unavailable for preparation batch 440-391821 and analytical batch 440-391887. The associated laboratory control sample (LCS) met acceptance criteria. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Client Sample ID: Outfall009_20170226_Grab

Lab Sample ID: 440-178122-1

Date Collected: 02/26/17 08:00

Matrix: Water

Date Received: 02/27/17 07:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.3	1.5	mg/L		03/03/17 09:15	03/03/17 12:24	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Method	Method Description	Protocol	Laboratory
1664A	HEM and SGT-HEM	1664A	TAL IRV

Protocol References:

1664A = EPA-821-98-002

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Client Sample ID: Outfall009_20170226_Grab

Lab Sample ID: 440-178122-1

Date Collected: 02/26/17 08:00

Matrix: Water

Date Received: 02/27/17 07:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1664A			951 mL	1000 mL	391821	03/03/17 09:15	JSS	TAL IRV
Total/NA	Analysis	1664A		1			391887	03/03/17 12:24	JSS	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-391821/1-A
Matrix: Water
Analysis Batch: 391887

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391821

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		03/03/17 09:15	03/03/17 12:24	1

Lab Sample ID: LCS 440-391821/2-A
Matrix: Water
Analysis Batch: 391887

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391821

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	37.0		mg/L		92	78 - 114

Lab Sample ID: LCSD 440-391821/3-A
Matrix: Water
Analysis Batch: 391887

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 391821

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	37.4		mg/L		94	78 - 114	1	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

General Chemistry

Prep Batch: 391821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178122-1	Outfall009_20170226_Grab	Total/NA	Water	1664A	
MB 440-391821/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-391821/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-391821/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 391887

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178122-1	Outfall009_20170226_Grab	Total/NA	Water	1664A	391821
MB 440-391821/1-A	Method Blank	Total/NA	Water	1664A	391821
LCS 440-391821/2-A	Lab Control Sample	Total/NA	Water	1664A	391821
LCSD 440-391821/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	391821

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 009 Grab

TestAmerica Job ID: 440-178122-1

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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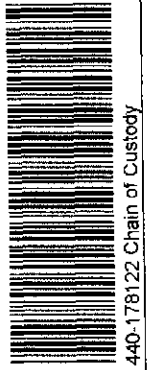
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CHAIN OF CUSTODY FORM

440-178122

WDCJOUR

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 <small>Test America's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and Test America Laboratories, Inc.</small> Sampler: Bryan Benson		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (003-007, 009, 010) Outfall 009 Grab		Project Manager: Katherine Miller 520.289.6606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Field Readings (include units) Time of Readings: 07:55 pH 6.68 pH unit Temp 6.31 °C/F		Meter serial #	
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Comments Hold		
Outfall 009	Outfall009_20170226_Grab	2/26/2017 12:35	WM	1 L Glass Amber	2	HCl	15	No	Oils & Grease (E1664A-HEM)		
	Outfall009_20170226_Grab_Extra	2/26/2017 12:35	WM	1 L Glass Amber	2	HCl	15	No	Date/Time: 2/27/2017		
Relinquished By: <i>[Signature]</i> Date/Time: 2/26/17		Relinquished By: <i>[Signature]</i> Date/Time: 2/27/17		Relinquished By: <i>[Signature]</i> Date/Time: 7:50		Relinquished By: <i>[Signature]</i> Date/Time: 2/26/17 12:35		Relinquished By: <i>[Signature]</i> Date/Time: 02-27-17 07:50		Turn-around time: (Check) 24 Hour: <input type="checkbox"/> 72 Hour: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> Normal: <input type="checkbox"/>	
Company:		Company:		Company:		Company:		Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/>		Store samples for 6 months. Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>	



Tap 1.5-1.8/1.3 / 7.1.4 / 2.0.2.3, 1.8, 1.9 12.85

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178122-1

Login Number: 178122

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-178169-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 9, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-178169-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170227_Comp	440-178169-1	N/A	Water	2/27/17 9:50 AM	E1613B, E200.8, E245.1, E300, SM2540C, SM4500- CN-E
Outfall009_20170227_Comp_F	440-178169-2	N/A	Water	2/27/17 9:50 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-178169-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except PeCDD and TCDD. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising all total detects except HpCDF in the method blank were the same peaks comprising the totals in sample Outfall009_20170227_Comp. The results for totals HpCDD, HxCDD, HxCDF, and TCDF were qualified as



nondetected (U). The reviewer verified that peaks comprising total HpCDF in the sample included more peaks than the method blank total. The sample result for totals HpCDF was qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for results flagged by the laboratory as EMPC values. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. Isomer 2,3,7,8-TCDF was not detected in the initial analysis of the sample, therefore, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). EMPCs for isomers 2,3,7,8-TCDD and 1,2,3,4,7,8-HxCDD were qualified as estimated nondetects (UJ). The result for total TCDD consisted only of the isomer qualified as an EMPC; therefore, the result for total TCDD was also qualified as an estimated nondetect (UJ). Total HpCDF containing an EMPC peak was qualified as estimated (J).

IV. METHODS 200.8 AND 245.1— METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 9, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall009_20170227_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals and mercury analyses approximately 47 hours after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with analysis of total antimony; this review is based on summary data for that CRQL.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total antimony; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total antimony; this review is based on summary data only for this ICSA analysis.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall009_20170227_Comp_F for both methods. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively. MS/MSD analyses were not performed for total metals or total mercury on the total sample in this SDG.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 300.0, *Standard Methods for the Examination of Water and Wastewater 2540C and 4500-CN-E*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for nitrate/nitrite
- 7 days for total dissolved solids (TDS)
- 14 days for total cyanide
- 28 days for chloride and sulfate

V.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. Analytical balance calibration logs were provided by the laboratory.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.

V.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPD for total cyanide was $\leq 10\%$.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.



V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401781691

Analysis Method E1613B

Sample Name Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-178169-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000018	0.000098	0.00000025	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000090	0.000098	0.00000025	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000063	0.000049	0.00000013	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	ND	0.000049	0.00000082	ug/L	U	U	
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000041	0.000049	0.00000019	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000047	0.000049	0.00000027	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000073	0.000049	0.00000027	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	ND	0.000049	0.00000022	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000066	0.000049	0.00000024	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000049	0.00000023	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000045	0.000049	0.00000021	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000049	0.00000016	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000034	0.000049	0.00000024	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000033	0.000049	0.00000020	ug/L	J,DXMBq	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000049	0.00000018	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000098	0.00000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	0.00000038	0.000098	0.00000023	ug/L	J,DXq	UJ	*III
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000010	0.000049	0.00000016	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000015	0.000049	0.00000082	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.00000080	0.000049	0.00000023	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000018	0.000049	0.00000024	ug/L	J,DXMBq	U	B
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000049	0.00000018	ug/L	U	U	

Analysis Method E1613B

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000034	0.000049	0.00000024	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000044	0.0000098	0.00000014	ug/L	J,DXMBq	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000038	0.0000098	0.00000023	ug/L	J,DXq	UJ	*III

Analysis Method E200.8

Sample Name Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-178169-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.68	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	3.0	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	10	5.0	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name Outfall009_20170227_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-178169-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	1.5	2.0	0.50	ug/L	J,DX	J	DNQ, H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	U	UJ	H
Copper	D	7440-50-8	3.1	2.0	0.50	ug/L		J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	U	UJ	H
Nickel	D	7440-02-0	1.7	2.0	0.50	ug/L	J,DX	J	DNQ, H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	U	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	U	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	U	UJ	H
Zinc	D	7440-66-6	3.4	20	2.5	ug/L	J,DX	J	DNQ, H

Analysis Method E245.1**Sample Name** Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:50:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178169-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall009_20170227_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:50:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178169-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	U	UJ	H

Analysis Method E300**Sample Name** Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:50:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178169-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	12	0.50	0.25	mg/L			
Nitrite/Nitrate	N	NO2NO3	2.5	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	14	0.50	0.25	mg/L			

Analysis Method SM2540C**Sample Name** Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:50:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178169-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	130	10	5.0	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 9:50:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178169-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178169-1

Client Project/Site: Routing Outfall 009 comp

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/30/2017 5:11:29 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/30/2017 5:11:29 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178169-1	Outfall009_20170227_Comp	Water	02/27/17 09:50	02/27/17 17:45
440-178169-2	Outfall009_20170227_Comp_F	Water	02/27/17 09:50	02/27/17 17:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Job ID: 440-178169-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-178169-1

Comments

Revised to correct Ni RL for 200.8.

Receipt

The samples were received on 2/27/2017 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 0.8° C, 0.9° C, 1.2° C, 1.3° C, 1.5° C, 1.6° C, 1.6° C, 2.1° C, 2.8° C and 3.4° C.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Chloride and Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-391014 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Client Sample ID: Outfall009_20170227_Comp

Lab Sample ID: 440-178169-1

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		0.50	0.25	mg/L			02/28/17 14:39	1
Sulfate	14		0.50	0.25	mg/L			02/28/17 14:39	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	2.5		0.15	0.070	mg/L			03/08/17 10:45	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.00000038	J,DX q	0.0000098	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
2,3,7,8-TCDF	ND		0.0000098	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,7,8-PeCDD	0.00000034	J,DX	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,7,8-PeCDF	ND		0.000049	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
2,3,4,7,8-PeCDF	ND		0.000049	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,4,7,8-HxCDD	0.00000073	J,DX q	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,6,7,8-HxCDD	0.00000066	J,DX MB q	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,7,8,9-HxCDD	0.00000045	J,DX MB	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,4,7,8-HxCDF	0.00000047	J,DX MB q	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,6,7,8-HxCDF	ND		0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,7,8,9-HxCDF	ND		0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
2,3,4,6,7,8-HxCDF	0.00000033	J,DX MB q	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,4,6,7,8-HpCDD	ND		0.000049	0.0000008	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,4,6,7,8-HpCDF	0.00000063	J,DX MB q	0.000049	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
1,2,3,4,7,8,9-HpCDF	0.00000041	J,DX	0.000049	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
OCDD	0.00000090	J,DX MB	0.000098	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
OCDF	0.00000018	J,DX MB	0.000098	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
Total TCDD	0.00000038	J,DX q	0.0000098	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
Total TCDF	0.00000044	J,DX MB q	0.0000098	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
Total PeCDD	0.00000034	J,DX	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
Total PeCDF	ND		0.000049	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
Total HxCDD	0.00000018	J,DX MB q	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1
Total HxCDF	0.00000080	J,DX MB q	0.000049	0.0000002	ug/L		03/07/17 08:58	03/12/17 22:44	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Client Sample ID: Outfall009_20170227_Comp

Lab Sample ID: 440-178169-1

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	0.0000015	J,DX MB	0.000049	0.0000008	ug/L		03/07/17 08:58	03/12/17 22:44	1
				2					
Total HpCDF	0.0000010	J,DX MB q	0.000049	0.0000001	ug/L		03/07/17 08:58	03/12/17 22:44	1
				6					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	81		25 - 164				03/07/17 08:58	03/12/17 22:44	1
13C-2,3,7,8-TCDF	81		24 - 169				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,7,8-PeCDD	82		25 - 181				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,7,8-PeCDF	78		24 - 185				03/07/17 08:58	03/12/17 22:44	1
13C-2,3,4,7,8-PeCDF	77		21 - 178				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,6,7,8-HxCDD	95		28 - 130				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,6,7,8-HxCDF	84		26 - 123				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,7,8,9-HxCDF	77		29 - 147				03/07/17 08:58	03/12/17 22:44	1
13C-2,3,4,6,7,8-HxCDF	84		28 - 136				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,4,6,7,8-HpCDD	86		23 - 140				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,4,6,7,8-HpCDF	87		28 - 143				03/07/17 08:58	03/12/17 22:44	1
13C-1,2,3,4,7,8,9-HpCDF	80		26 - 138				03/07/17 08:58	03/12/17 22:44	1
13C-OCDD	92		17 - 157				03/07/17 08:58	03/12/17 22:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	85		35 - 197				03/07/17 08:58	03/12/17 22:44	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		10	5.0	ug/L		03/07/17 12:01	03/13/17 15:48	1
Nickel	ND		10	5.0	ug/L		03/07/17 12:01	03/13/17 15:48	1
Zinc	ND		20	10	ug/L		03/07/17 12:01	03/13/17 15:48	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 12:01	03/13/17 15:48	1
Antimony	0.68	J,DX	2.0	0.50	ug/L		03/07/17 12:01	03/15/17 13:41	1
Thallium	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:48	1
Copper	3.0		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:48	1
Lead	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:48	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:48	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/10/17 15:54	03/11/17 03:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	130		10	5.0	mg/L			03/02/17 09:00	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/06/17 14:31	03/07/17 17:29	1

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Client Sample ID: Outfall009_20170227_Comp_F

Lab Sample ID: 440-178169-2

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND	QP	1.0	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Cadmium	ND	QP	1.0	0.25	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Copper	3.1	QP	2.0	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Lead	ND	QP	1.0	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Antimony	1.5	J,DX QP	2.0	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Selenium	ND	QP	2.0	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Thallium	ND	QP	1.0	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Nickel	1.7	J,DX QP	10	0.50	ug/L	-	03/06/17 10:38	03/09/17 13:46	1
Zinc	3.4	J,DX QP	20	2.5	ug/L	-	03/06/17 10:38	03/09/17 13:46	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L	-	03/10/17 16:07	03/11/17 03:33	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Client Sample ID: Outfall009_20170227_Comp

Lab Sample ID: 440-178169-1

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	391014	02/28/17 14:39	NTN	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			392730	03/08/17 10:45	TLN	TAL IRV
Total/NA	Prep	1613B			1018.2 mL	20 uL	153547	03/07/17 08:58	GLB	TAL SAC
Total/NA	Analysis	1613B		1			154717	03/12/17 22:44	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	392459	03/07/17 12:01	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			393721	03/13/17 15:48	RC	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	392459	03/07/17 12:01	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			394171	03/15/17 13:41	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	393350	03/10/17 15:54	DB	TAL IRV
Total/NA	Analysis	245.1		1			393412	03/11/17 03:54	DB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	391570	03/02/17 09:00	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	392271	03/06/17 14:31	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			392591	03/07/17 17:29	SN	TAL IRV

Client Sample ID: Outfall009_20170227_Comp_F

Lab Sample ID: 440-178169-2

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391451	03/01/17 17:00	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	392202	03/06/17 10:38	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			393037	03/09/17 13:46	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391451	03/01/17 17:00	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	393351	03/10/17 16:07	DB	TAL IRV
Dissolved	Analysis	245.1		1			393411	03/11/17 03:33	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-391014/5
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/28/17 12:50	1
Sulfate	ND		0.50	0.25	mg/L			02/28/17 12:50	1

Lab Sample ID: LCS 440-391014/4
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.92		mg/L		98	90 - 110
Sulfate	5.00	4.79		mg/L		96	90 - 110

Lab Sample ID: 440-178167-B-1 MS
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	11		5.00	17.0		mg/L		112	80 - 120

Lab Sample ID: 440-178167-B-1 MSD
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	11		5.00	16.9		mg/L		110	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-153547/1-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153547

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8-PeCDF	0.00000105	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
2,3,4,7,8-PeCDF	0.000000793	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,6,7,8-HxCDD	0.00000104	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8,9-HxCDD	0.000000557	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,7,8-HxCDF	0.00000103	J,DX	0.000050	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,6,7,8-HxCDF	0.000000880	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-153547/1-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153547

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
2,3,4,6,7,8-HxCDF	0.000000935	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,6,7,8-HpCDD	ND		0.000050	0.0000010	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,6,7,8-HpCDF	0.00000114	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000004	ug/L		03/07/17 07:19	03/12/17 06:51	1
OCDD	0.00000520	J,DX q	0.00010	0.0000006	ug/L		03/07/17 07:19	03/12/17 06:51	1
OCDF	0.00000250	J,DX	0.00010	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total TCDD	ND		0.000010	0.0000018	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total TCDF	0.000000802	J,DX q	0.000010	0.0000001	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total PeCDD	ND		0.000050	0.0000014	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total PeCDF	0.00000198	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HxCDD	0.00000160	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HxCDF	0.00000285	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HpCDD	0.00000120	J,DX q	0.000050	0.0000010	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HpCDF	0.00000114	J,DX q	0.000050	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164	03/07/17 07:19	03/12/17 06:51	1
13C-2,3,7,8-TCDF	58		24 - 169	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	03/07/17 07:19	03/12/17 06:51	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	03/07/17 07:19	03/12/17 06:51	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	03/07/17 07:19	03/12/17 06:51	1
13C-OCDD	54		17 - 157	03/07/17 07:19	03/12/17 06:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	03/07/17 07:19	03/12/17 06:51	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-153547/2-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153547

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000192		ug/L		96	67 - 158
2,3,7,8-TCDF	0.000200	0.000174	MB	ug/L		87	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000966		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000946	MB	ug/L		95	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000972	MB	ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000967	MB	ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000946	MB	ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000974	MB	ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000973	MB	ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000949		ug/L		95	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000945	MB	ug/L		94	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000947		ug/L		95	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000945	MB	ug/L		95	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000974		ug/L		97	78 - 138
OCDD	0.00200	0.00194	MB	ug/L		97	78 - 144
OCDF	0.00200	0.00185	MB	ug/L		92	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	72		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	72		13 - 328
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,6,7,8-HxCDD	81		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202
13C-1,2,3,6,7,8-HxCDF	67		21 - 159
13C-1,2,3,7,8,9-HxCDF	66		17 - 205
13C-2,3,4,6,7,8-HxCDF	73		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	70		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	68		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Lab Sample ID: LCSD 320-153547/3-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153547

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000184		ug/L		92	67 - 158	4	50
2,3,7,8-TCDF	0.000200	0.000176	MB	ug/L		88	75 - 158	1	50
1,2,3,7,8-PeCDD	0.00100	0.000993		ug/L		99	70 - 142	3	50
1,2,3,7,8-PeCDF	0.00100	0.000943	MB	ug/L		94	80 - 134	0	50
2,3,4,7,8-PeCDF	0.00100	0.000970	MB	ug/L		97	68 - 160	0	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-153547/3-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153547

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000978		ug/L		98	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.000913	MB	ug/L		91	76 - 134	6	50
1,2,3,7,8,9-HxCDD	0.00100	0.000933	MB	ug/L		93	64 - 162	1	50
1,2,3,4,7,8-HxCDF	0.00100	0.000946	MB	ug/L		95	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.000939	MB	ug/L		94	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.000946		ug/L		95	78 - 130	0	50
2,3,4,6,7,8-HxCDF	0.00100	0.000952	MB	ug/L		95	70 - 156	1	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000932		ug/L		93	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000911	MB	ug/L		91	82 - 122	4	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000926		ug/L		93	78 - 138	5	50
OCDD	0.00200	0.00187	MB	ug/L		93	78 - 144	4	50
OCDF	0.00200	0.00182	MB	ug/L		91	63 - 170	2	50

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	57		21 - 193
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,4,7,8-HxCDF	55		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	59		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	56		20 - 186
13C-OCDD	60		13 - 199

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-153547/1-A
Matrix: Water
Analysis Batch: 155294

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153547

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000014	ug/L		03/07/17 07:19	03/15/17 22:51	1
Isotope Dilution	MB MB		Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF - RA	60		24 - 169				03/07/17 07:19	03/15/17 22:51	1
Surrogate	MB MB		Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD - RA	85		35 - 197				03/07/17 07:19	03/15/17 22:51	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-392459/1-A
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		10	5.0	ug/L		03/07/17 12:01	03/13/17 15:34	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 12:01	03/13/17 15:34	1
Nickel	ND		10	5.0	ug/L		03/07/17 12:01	03/13/17 15:34	1
Thallium	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Zinc	ND		20	10	ug/L		03/07/17 12:01	03/13/17 15:34	1
Copper	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Lead	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1

Lab Sample ID: MB 440-392459/1-A
Matrix: Water
Analysis Batch: 394171

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.50	ug/L		03/07/17 12:01	03/15/17 13:34	1

Lab Sample ID: LCS 440-392459/2-A
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	80.0	88.6		ug/L		111	85 - 115
Cadmium	80.0	88.5		ug/L		111	85 - 115
Nickel	80.0	86.5		ug/L		108	85 - 115
Thallium	80.0	91.4		ug/L		114	85 - 115
Zinc	80.0	88.0		ug/L		110	85 - 115
Copper	80.0	88.3		ug/L		110	85 - 115
Lead	80.0	88.9		ug/L		111	85 - 115
Selenium	80.0	90.7		ug/L		113	85 - 115

Lab Sample ID: LCS 440-392459/2-A
Matrix: Water
Analysis Batch: 394171

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	80.0	91.2		ug/L		114	85 - 115

Lab Sample ID: 440-178167-F-1-C MS
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		80.0	76.9		ug/L		96	70 - 130
Cadmium	ND		80.0	75.0		ug/L		94	70 - 130
Nickel	ND		80.0	71.9		ug/L		90	70 - 130
Thallium	ND		80.0	78.1		ug/L		98	70 - 130
Zinc	ND		80.0	75.6		ug/L		95	70 - 130
Copper	2.2		80.0	76.9		ug/L		93	70 - 130
Lead	ND		80.0	76.4		ug/L		96	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-178167-F-1-C MS
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Selenium	ND		80.0	74.6		ug/L		93	70 - 130

Lab Sample ID: 440-178167-F-1-C MS
Matrix: Water
Analysis Batch: 394171

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Antimony	ND		80.0	79.6		ug/L		100	70 - 130

Lab Sample ID: 440-178167-F-1-D MSD
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND		80.0	77.0		ug/L		96	70 - 130	0	20
Cadmium	ND		80.0	74.6		ug/L		93	70 - 130	0	20
Nickel	ND		80.0	71.4		ug/L		89	70 - 130	1	20
Thallium	ND		80.0	79.3		ug/L		99	70 - 130	1	20
Zinc	ND		80.0	76.2		ug/L		95	70 - 130	1	20
Copper	2.2		80.0	76.8		ug/L		93	70 - 130	0	20
Lead	ND		80.0	77.0		ug/L		96	70 - 130	1	20
Selenium	ND		80.0	75.3		ug/L		94	70 - 130	1	20

Lab Sample ID: 440-178167-F-1-D MSD
Matrix: Water
Analysis Batch: 394171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Antimony	ND		80.0	79.3		ug/L		99	70 - 130	0	20

Lab Sample ID: MB 440-391451/1-C
Matrix: Water
Analysis Batch: 393037

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 392202

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1
Cadmium	ND		1.0	0.25	ug/L		03/06/17 10:38	03/09/17 13:43	1
Antimony	ND		2.0	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1
Nickel	ND		10	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1
Thallium	ND		1.0	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1
Zinc	ND		20	2.5	ug/L		03/06/17 10:38	03/09/17 13:43	1
Copper	ND		2.0	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1
Lead	ND		1.0	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1
Selenium	ND		2.0	0.50	ug/L		03/06/17 10:38	03/09/17 13:43	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-391451/2-C
Matrix: Water
Analysis Batch: 393037

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 392202

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	80.0	79.3		ug/L		99	85 - 115
Cadmium	80.0	78.4		ug/L		98	85 - 115
Antimony	80.0	79.9		ug/L		100	85 - 115
Nickel	80.0	78.5		ug/L		98	85 - 115
Thallium	80.0	82.6		ug/L		103	85 - 115
Zinc	80.0	77.5		ug/L		97	85 - 115
Copper	80.0	80.2		ug/L		100	85 - 115
Lead	80.0	79.1		ug/L		99	85 - 115
Selenium	80.0	78.9		ug/L		99	85 - 115

Lab Sample ID: 440-178169-2 MS
Matrix: Water
Analysis Batch: 393037

Client Sample ID: Outfall009_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 392202

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Silver	ND	QP	80.0	79.4		ug/L		99	70 - 130
Cadmium	ND	QP	80.0	77.8		ug/L		97	70 - 130
Antimony	1.5	J,DX QP	80.0	82.1		ug/L		101	70 - 130
Nickel	1.7	J,DX QP	80.0	79.8		ug/L		98	70 - 130
Thallium	ND	QP	80.0	81.2		ug/L		102	70 - 130
Zinc	3.4	J,DX QP	80.0	78.5		ug/L		94	70 - 130
Copper	3.1	QP	80.0	82.3		ug/L		99	70 - 130
Lead	ND	QP	80.0	78.0		ug/L		97	70 - 130
Selenium	ND	QP	80.0	78.6		ug/L		98	70 - 130

Lab Sample ID: 440-178169-2 MSD
Matrix: Water
Analysis Batch: 393037

Client Sample ID: Outfall009_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 392202

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Silver	ND	QP	80.0	79.3		ug/L		99	70 - 130	0	20
Cadmium	ND	QP	80.0	78.6		ug/L		98	70 - 130	1	20
Antimony	1.5	J,DX QP	80.0	82.3		ug/L		101	70 - 130	0	20
Nickel	1.7	J,DX QP	80.0	81.1		ug/L		99	70 - 130	2	20
Thallium	ND	QP	80.0	82.0		ug/L		103	70 - 130	1	20
Zinc	3.4	J,DX QP	80.0	79.0		ug/L		94	70 - 130	1	20
Copper	3.1	QP	80.0	84.5		ug/L		102	70 - 130	3	20
Lead	ND	QP	80.0	79.2		ug/L		99	70 - 130	2	20
Selenium	ND	QP	80.0	77.4		ug/L		97	70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-393350/1-A
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393350

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/10/17 15:54	03/11/17 03:41	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 440-393350/2-A
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 393350

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.74		ug/L		97	85 - 115

Lab Sample ID: 440-178167-F-1-E MS
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 393350

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.85		ug/L		98	70 - 130

Lab Sample ID: 440-178167-F-1-F MSD
Matrix: Water
Analysis Batch: 393412

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 393350

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.84		ug/L		98	70 - 130	0	20

Lab Sample ID: MB 440-391923/1-E
Matrix: Water
Analysis Batch: 393411

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 393351

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/10/17 16:07	03/11/17 03:22	1

Lab Sample ID: LCS 440-391923/2-E
Matrix: Water
Analysis Batch: 393411

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 393351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.59		ug/L		95	85 - 115

Lab Sample ID: 440-178169-2 MS
Matrix: Water
Analysis Batch: 393411

Client Sample ID: Outfall009_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 393351

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.75		ug/L		97	70 - 130

Lab Sample ID: 440-178169-2 MSD
Matrix: Water
Analysis Batch: 393411

Client Sample ID: Outfall009_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 393351

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.52		ug/L		94	70 - 130	3	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-391570/1
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			03/02/17 09:00	1

Lab Sample ID: LCS 440-391570/2
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	964		mg/L		96	90 - 110

Lab Sample ID: 440-177985-C-1 DU
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	210		202		mg/L		4	5

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-392271/1-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392271

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/06/17 14:31	03/07/17 17:28	1

Lab Sample ID: LCS 440-392271/2-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	92.0		ug/L		92	90 - 110

Lab Sample ID: LCSD 440-392271/3-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	95.7		ug/L		96	90 - 110	4	10

Lab Sample ID: 440-178167-G-1-C MS
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	103		ug/L		103	70 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-178167-G-1-F MSD
 Matrix: Water
 Analysis Batch: 392591

Client Sample ID: Matrix Spike Duplicate
 Prep Type: Total/NA
 Prep Batch: 392271

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	101		ug/L		101	70 - 115	3	15

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

HPLC/IC

Analysis Batch: 391014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	300.0	
MB 440-391014/5	Method Blank	Total/NA	Water	300.0	
LCS 440-391014/4	Lab Control Sample	Total/NA	Water	300.0	
440-178167-B-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-178167-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 392730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 153547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	1613B	
MB 320-153547/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-153547/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-153547/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-153547/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 154715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-153547/1-A	Method Blank	Total/NA	Water	1613B	153547
LCS 320-153547/2-A	Lab Control Sample	Total/NA	Water	1613B	153547
LCS 320-153547/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	153547

Analysis Batch: 154717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	1613B	153547

Analysis Batch: 155294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-153547/1-A - RA	Method Blank	Total/NA	Water	1613B	153547

Metals

Filtration Batch: 391451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-2	Outfall009_20170227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-391451/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-391451/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
440-178169-2 MS	Outfall009_20170227_Comp_F	Dissolved	Water	FILTRATION	
440-178169-2 MSD	Outfall009_20170227_Comp_F	Dissolved	Water	FILTRATION	

Filtration Batch: 391923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-391923/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-391923/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Metals (Continued)

Prep Batch: 392202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-2	Outfall009_20170227_Comp_F	Dissolved	Water	200.2	391451
MB 440-391451/1-C	Method Blank	Dissolved	Water	200.2	391451
LCS 440-391451/2-C	Lab Control Sample	Dissolved	Water	200.2	391451
440-178169-2 MS	Outfall009_20170227_Comp_F	Dissolved	Water	200.2	391451
440-178169-2 MSD	Outfall009_20170227_Comp_F	Dissolved	Water	200.2	391451

Prep Batch: 392459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total Recoverable	Water	200.2	
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-178167-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-178167-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 393037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-2	Outfall009_20170227_Comp_F	Dissolved	Water	200.8	392202
MB 440-391451/1-C	Method Blank	Dissolved	Water	200.8	392202
LCS 440-391451/2-C	Lab Control Sample	Dissolved	Water	200.8	392202
440-178169-2 MS	Outfall009_20170227_Comp_F	Dissolved	Water	200.8	392202
440-178169-2 MSD	Outfall009_20170227_Comp_F	Dissolved	Water	200.8	392202

Prep Batch: 393350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	245.1	
MB 440-393350/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-393350/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-178167-F-1-E MS	Matrix Spike	Total/NA	Water	245.1	
440-178167-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 393351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-2	Outfall009_20170227_Comp_F	Dissolved	Water	245.1	391451
MB 440-391923/1-E	Method Blank	Dissolved	Water	245.1	391923
LCS 440-391923/2-E	Lab Control Sample	Dissolved	Water	245.1	391923
440-178169-2 MS	Outfall009_20170227_Comp_F	Dissolved	Water	245.1	391451
440-178169-2 MSD	Outfall009_20170227_Comp_F	Dissolved	Water	245.1	391451

Analysis Batch: 393411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-2	Outfall009_20170227_Comp_F	Dissolved	Water	245.1	393351
MB 440-391923/1-E	Method Blank	Dissolved	Water	245.1	393351
LCS 440-391923/2-E	Lab Control Sample	Dissolved	Water	245.1	393351
440-178169-2 MS	Outfall009_20170227_Comp_F	Dissolved	Water	245.1	393351
440-178169-2 MSD	Outfall009_20170227_Comp_F	Dissolved	Water	245.1	393351

Analysis Batch: 393412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	245.1	393350
MB 440-393350/1-A	Method Blank	Total/NA	Water	245.1	393350
LCS 440-393350/2-A	Lab Control Sample	Total/NA	Water	245.1	393350

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Metals (Continued)

Analysis Batch: 393412 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178167-F-1-E MS	Matrix Spike	Total/NA	Water	245.1	393350
440-178167-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	393350

Analysis Batch: 393721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total Recoverable	Water	200.8	392459
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.8	392459
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.8	392459
440-178167-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.8	392459
440-178167-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	392459

Analysis Batch: 394171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total Recoverable	Water	200.8	392459
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.8	392459
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.8	392459
440-178167-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.8	392459
440-178167-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	392459

General Chemistry

Analysis Batch: 391570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	SM 2540C	
MB 440-391570/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-391570/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177985-C-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Prep Batch: 392271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	Distill/CN	
MB 440-392271/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-392271/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-392271/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-178167-G-1-C MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-178167-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 392591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	SM 4500 CN E	392271
MB 440-392271/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	392271
LCS 440-392271/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	392271
LCSD 440-392271/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	392271
440-178167-G-1-C MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	392271
440-178167-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	392271

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18
The following analytes are included in this report, but certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
NO3NO2 Calc		Water	Nitrate Nitrite as N	

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17 *
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Chain of Custody Record



THE TESTAMERICA GROUP COMPANY, INC.

Client Information (Sub Contract Lab)		Sampler: Lab PM Patel, Urvasghi		Carrier Tracking Note: COC No. 440-108188-1	
Client Contact: Shipping/Receiving		E-Mail: urvasghi.patel@testamericainc.com		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Job #: 440-178169-1	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		Due Date Requested: 3/9/2017		Accreditations Required (See note): State Program - California	
Email:		TAT Requested (days):		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 L - EDA Other:	
Project Name: Boeing NPDES SSFL outfalls		Project #: 44009879		Analysis Requested:	
Site:		SSOWR		Total Number of Containers	
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
Outfall009_20170227_Comp (440-178169-1)		2/27/17		X	
Outfall009_20170227_Comp_Extra (440-178169-3)		2/27/17		X	
Sample Type (C=comp, G=grab)		Sample Time		Perform MS/MSD (Yes or No)	
Water		09:50 Pacific		X	
Water		09:50 Pacific		X	
Matrix (W=water, S=solid, G=grab)		Preservation Code		Special Instructions/Note:	
Water		Water		See OAS, Boiling_w/u to zero, ug/L, Use Boeing glassware.	
Water		Water		See OAS, Boiling_w/u to zero, ug/L, Use Boeing glassware.	

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Possible Hazard Identification
 Unconfirmed _____
 Deliverable Requested: I, II, III, IV, Other (specify) _____

Chain of Custody

Reinquired by: <i>SubBana</i>	Date/Time: 2/28/17 17:00	Company: <i>DAE</i>	Received by: <i>Urvasghi Patel</i>	Date/Time: 3-1-17 9:30	Company: <i>DAE</i>
Reinquired by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Reinquired by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Cooler Temperature(s) °C and Other Remarks: 1.4



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178169-1

Login Number: 178169

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178169-1

Login Number: 178169

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 03/03/17 08:21 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-178169-1	Outfall009_20170227_Comp		81		81		82		78
MB 320-153547/1-A	Method Blank		59		58		59		54
MB 320-153547/1-A - RA	Method Blank				60				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-178169-1	Outfall009_20170227_Comp		77		84		95		75
MB 320-153547/1-A	Method Blank		56		57		62		50
MB 320-153547/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-178169-1	Outfall009_20170227_Comp		84		77		84	86	
MB 320-153547/1-A	Method Blank		55		52		58	54	
MB 320-153547/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)		
440-178169-1	Outfall009_20170227_Comp		87		80		92		
MB 320-153547/1-A	Method Blank		56		49		54		
MB 320-153547/1-A - RA	Method Blank								

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-153547/2-A	Lab Control Sample	74	72	77	70	72	68	81	64
LCSD 320-153547/3-A	Lab Control Sample Dup	64	60	61	59	59	57	69	55

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-153547/2-A	Lab Control Sample	67	66	73	70	70	64	68
LCSD 320-153547/3-A	Lab Control Sample Dup	58	56	60	59	60	56	60

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178169-2

Client Project/Site: Routing Outfall 009 comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/28/2017 9:49:54 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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- 1
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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/28/2017 9:49:54 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178169-1	Outfall009_20170227_Comp	Water	02/27/17 09:50	02/27/17 17:45

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Job ID: 440-178169-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-178169-2

Comments

No additional comments.

Receipt

The samples were received on 2/27/2017 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 10 coolers at receipt time were 0.8° C, 0.9° C, 1.2° C, 1.3° C, 1.5° C, 1.6° C, 1.6° C, 2.1° C, 2.8° C and 3.4° C.

RAD

Method(s) 900.0: Gross alpha/beta Batch 298029:

The gross alpha matrix spike (MS) recovery associated with the following samples was outside control limits of 60-140% (56%): Outfall009_20170227_Comp (440-178169-1), (440-178167-R-1-G), (440-178167-R-1-H MS), (440-178167-R-1-J MSB), (440-178167-R-1-K MSB) and (440-178167-R-1-I MSD). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Client Sample ID: Outfall009_20170227_Comp

Lab Sample ID: 440-178169-1

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.793	U	0.983	0.988	3.00	1.63	pCi/L	03/16/17 14:36	03/23/17 05:36	1
Gross Beta	1.02		0.635	0.643	4.00	0.959	pCi/L	03/16/17 14:36	03/23/17 05:36	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-5.97	U	11.5	11.5	20.0	13.8	pCi/L	03/03/17 02:43	03/03/17 09:17	1
Potassium-40	-57.7	U	109	110		176	pCi/L	03/03/17 02:43	03/03/17 09:17	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0549	U	0.0728	0.0730	1.00	0.122	pCi/L	03/03/17 13:14	03/27/17 07:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.6		40 - 110					03/03/17 13:14	03/27/17 07:34	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.257	U	0.261	0.262	1.00	0.424	pCi/L	03/03/17 14:10	03/17/17 14:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.6		40 - 110					03/03/17 14:10	03/17/17 14:42	1
Y Carrier	84.5		40 - 110					03/03/17 14:10	03/17/17 14:42	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.233	U	0.165	0.166	3.00	0.256	pCi/L	03/03/17 14:30	03/13/17 10:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.4		40 - 110					03/03/17 14:30	03/13/17 10:35	1
Y Carrier	106		40 - 110					03/03/17 14:30	03/13/17 10:35	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-127	U	177	177	500	338	pCi/L	03/21/17 12:50	03/21/17 20:51	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Client Sample ID: Outfall009_20170227_Comp

Lab Sample ID: 440-178169-1

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.110	U	0.141	0.142	1.00	0.189	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	67.1		30 - 110					03/09/17 12:44	03/16/17 23:27	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Client Sample ID: Outfall009_20170227_Comp

Lab Sample ID: 440-178169-1

Date Collected: 02/27/17 09:50

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	298029	03/16/17 14:36	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	299254	03/23/17 05:36	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	295719	03/03/17 02:43	CMT	TAL SL
Total/NA	Analysis	901.1		1			295915	03/03/17 09:17	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.61 mL	1.0 g	295953	03/03/17 13:14	BME	TAL SL
Total/NA	Analysis	903.0		1			300093	03/27/17 07:34	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.61 mL	1.0 g	295966	03/03/17 14:10	BME	TAL SL
Total/NA	Analysis	904.0		1			298074	03/17/17 14:42	MLK	TAL SL
Total/NA	Prep	PrecSep-7			1000.64 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297321	03/13/17 10:35	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	298834	03/21/17 12:50	JDL	TAL SL
Total/NA	Analysis	906.0		1			299020	03/21/17 20:51	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.11 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298123	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-298029/1-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298029

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.475		0.692	0.712	3.00	0.852	pCi/L	03/16/17 14:36	03/23/17 05:34	1
Gross Beta	0.5347	U	0.548	0.551	4.00	0.857	pCi/L	03/16/17 14:36	03/23/17 05:34	1

Lab Sample ID: LCS 160-298029/2-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.97		6.23	3.00	1.84	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-298029/3-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	90.9	90.32		9.56	4.00	0.870	pCi/L	99	75 - 125

Lab Sample ID: 440-178167-R-1-H MS
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.506	U	49.9	28.11	F1	5.02	3.00	1.85	pCi/L	56	60 - 140

Lab Sample ID: 440-178167-R-1-H MS
Matrix: Water
Analysis Batch: 299549

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.506	U	49.9	28.96	F1	4.89	3.00	1.91	pCi/L	58	60 - 140

Lab Sample ID: 440-178167-R-1-I MSD
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	0.506	U	49.9	30.52		5.00	3.00	1.46	pCi/L	61	60 - 140	0.16	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-178167-R-1-J MSBT
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	1.73		90.9	93.27		9.87	4.00	1.07	pCi/L	101	60 - 140

Lab Sample ID: 440-178167-R-1-K MSBTD
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	1.73		90.9	90.86		9.63	4.00	0.933	pCi/L	98	60 - 140	0.17	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-295719/1-A
Matrix: Water
Analysis Batch: 295909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295719

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.148	U	7.04	7.04	20.0	8.78	pCi/L	03/03/17 02:43	03/03/17 09:13	1
Potassium-40	-2.680	U	127	127		168	pCi/L	03/03/17 02:43	03/03/17 09:13	1

Lab Sample ID: LCS 160-295719/2-A
Matrix: Water
Analysis Batch: 295917

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295719

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132200		15300		434	pCi/L	97	90 - 111
Cesium-137	47000	46340		4650	20.0	139	pCi/L	99	90 - 111
Cobalt-60	39600	38420		3800		80.3	pCi/L	97	89 - 110

Lab Sample ID: 440-178167-R-1-B DU
Matrix: Water
Analysis Batch: 295917

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 295719

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	2.42	U	-3.585	U	12.8	20.0	15.8	pCi/L	0.29	1
Potassium-40	-82.2	U	54.06	U	96.1		158	pCi/L	0.54	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-295953/1-A
Matrix: Water
Analysis Batch: 300092

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295953

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.02758	U	0.0542	0.0542	1.00	0.0978	pCi/L	03/03/17 13:14	03/27/17 07:29	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	Limits					03/03/17 13:14	03/27/17 07:29	1
	86.7		40 - 110							

Lab Sample ID: LCS 160-295953/2-A
Matrix: Water
Analysis Batch: 300092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	11.01		1.14	1.00	0.102	pCi/L	97	68 - 137
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	Limits					03/03/17 13:14	03/27/17 07:29
	87.9		40 - 110						

Lab Sample ID: 440-178167-M-1-A MS
Matrix: Water
Analysis Batch: 300093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Sample Sample		Spike Added	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.167		11.4	12.29		1.27	1.00	0.110	pCi/L	107	75 - 138
Carrier	MS MS		Limits		Prepared	Analyzed	Dil Fac				
Ba Carrier	%Yield	Qualifier	Limits					03/03/17 13:14	03/27/17 07:29	1	
	90.3		40 - 110								

Lab Sample ID: 440-178167-M-1-B MSD
Matrix: Water
Analysis Batch: 300093

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Sample Sample		Spike Added	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual	Uncert. (2σ+/-)							
Radium-226	0.167		11.4	12.36		1.28	1.00	0.116	pCi/L	107	75 - 138	0.03	1
Carrier	MSD MSD		Limits		Prepared	Analyzed	Dil Fac						
Ba Carrier	%Yield	Qualifier	Limits					03/03/17 13:14	03/27/17 07:29	1			
	90.6		40 - 110										

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-295966/1-A
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295966

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.1442	U	0.239	0.239	1.00	0.404	pCi/L	03/03/17 14:10	03/17/17 14:41	1
Carrier	MB MB		Limits		Prepared	Analyzed	Dil Fac			
	%Yield	Qualifier								
Ba Carrier	86.7		40 - 110		03/03/17 14:10	03/17/17 14:41	1			
Y Carrier	87.9		40 - 110		03/03/17 14:10	03/17/17 14:41	1			

Lab Sample ID: LCS 160-295966/2-A
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-228	13.7	15.19		1.63	1.00	0.390	pCi/L	111	56 - 140
Carrier	LCS LCS		Limits		Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier							
Ba Carrier	87.9		40 - 110						
Y Carrier	86.4		40 - 110						

Lab Sample ID: 440-178167-M-1-C MS
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Radium-228	-0.205	U	13.7	15.81		1.69	1.00	0.441	pCi/L	115	45 - 150
Carrier	MS MS		Limits		Prepared	Analyzed	Dil Fac				
	%Yield	Qualifier									
Ba Carrier	90.3		40 - 110								
Y Carrier	86.0		40 - 110								

Lab Sample ID: 440-178167-M-1-D MSD
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Radium-228	-0.205	U	13.7	16.18		1.73	1.00	0.410	pCi/L	118	45 - 150	0.11	1
Carrier	MSD MSD		Limits		Prepared	Analyzed	Dil Fac						
	%Yield	Qualifier											
Ba Carrier	90.6		40 - 110										
Y Carrier	83.0		40 - 110										

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110					03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110					03/03/17 14:30	03/13/17 10:31	1

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-178167-M-1-E MS
Matrix: Water
Analysis Batch: 297321

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0502	U	8.49	8.236		0.866	3.00	0.320	pCi/L	97	19 - 150
Carrier	MS %Yield	MS Qualifier	Limits								
Sr Carrier	82.1		40 - 110								
Y Carrier	100		40 - 110								

Lab Sample ID: 440-178167-M-1-F MSD
Matrix: Water
Analysis Batch: 297321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0502	U	8.49	8.112		0.850	3.00	0.312	pCi/L	96	19 - 150	0.07	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Sr Carrier	80.6		40 - 110										
Y Carrier	105		40 - 110										

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298834/1-A
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298834

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-205.9	U	168	169	500	336	pCi/L	03/21/17 12:50	03/21/17 18:35	1

Lab Sample ID: LCS 160-298834/2-A
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2901		447	500	340	pCi/L	99	74 - 114

Lab Sample ID: 440-178167-L-1-A MS
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-90.1	U	2930	3090		461	500	333	pCi/L	105	67 - 130

Lab Sample ID: 440-178167-L-1-B MSD
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-90.1	U	2940	2365		397	500	333	pCi/L	81	67 - 130	0.85	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	73.2		30 - 110	03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

	LCS	LCS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	89.4		30 - 110

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146	
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	63.1		30 - 110

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146	0.83	1	
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1	

	MSD	MSD	
Tracer	%Yield	Qualifier	Limits
Uranium-232	81.8		30 - 110

Lab Sample ID: 440-178167-M-1-G MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146	
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	74.3		30 - 110

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1	
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

<i>Tracer</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
Uranium-232	89.0		30 - 110

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Rad

Prep Batch: 295719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-295719/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-295719/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-178167-R-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 295953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	PrecSep-21	
MB 160-295953/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-295953/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-178167-M-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-178167-M-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 295966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	PrecSep_0	
MB 160-295966/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-295966/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-178167-M-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-178167-M-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-178167-M-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-178167-M-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 298029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	Evaporation	
MB 160-298029/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-298029/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-298029/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-178167-R-1-H MS	Matrix Spike	Total/NA	Water	Evaporation	
440-178167-R-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-178167-R-1-J MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-178167-R-1-K MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Rad (Continued)

Prep Batch: 298834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178169-1	Outfall009_20170227_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-298834/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298834/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-178167-L-1-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-178167-L-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Chain of Custody Record



Client Information (Sub Contract Lab) Company: TestAmerica Laboratories, Inc. Address: 13715 Rider Trail North, Irvine, CA 92614-5817 City: Irvine, State: CA, Zip: 92614 Phone: 949-261-1022 (Tel), 949-260-3297 (Fax) Email: info@testamericainc.com Project Name: Boeing NPDES SSFL outfalls Site:		Sampler: Patel, Urvashi Lab PM: Patel, Urvashi E-Mail: urvashi.patel@testamericainc.com Accreditations Required (See note): State Program - California Due Date Requested: 3/9/2017 TAT Requested (days):	Job #: 440-178169-1 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:
Sample Identification - Client ID (Lab ID) Outfall009_20170227_Comp (440-178169-1)		Matrix: Water Sample Type (C=comp, G=grab): Sample Time: 09:50 Pacific Sample Date: 2/27/17	Analysis Requested: 901.1_Ca/Fill_Geo_0 K-40 and Cesium-137 900.0/Evaporation Gross Alpha/Beta A01R_U/ExtChrom_Actin Total Uranium 904.0/PrecSep_0 Radium-226 905.5/90/PrecSep_7 Strontium-90 906.0/ISC_Dist_Susp Tritium
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) Total Number of Containers: 2 Special Instructions/Note: Boeing SSFL; DO NOT FILTER; use prep date from preservation	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/OC Requirements:
Chain of Custody Date/Time: 2/28/17 17:00 Date/Time: 3/1/17 10:15 Date/Time: Date/Time:		Date/Time: Date/Time: Date/Time: Date/Time:	Company: TAA Company Company: TAA Company Company:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178169-2

Login Number: 178169

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178169-2

Login Number: 178169

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 03/02/17 12:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0,17.0,17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-178167-M-1-A MS	Matrix Spike	90.3
440-178167-M-1-B MSD	Matrix Spike Duplicate	90.6
440-178169-1	Outfall009_20170227_Comp	82.6
LCS 160-295953/2-A	Lab Control Sample	87.9
MB 160-295953/1-A	Method Blank	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-178167-M-1-C MS	Matrix Spike	90.3	86.0
440-178167-M-1-D MSD	Matrix Spike Duplicate	90.6	83.0
440-178169-1	Outfall009_20170227_Comp	82.6	84.5
LCS 160-295966/2-A	Lab Control Sample	87.9	86.4
MB 160-295966/1-A	Method Blank	86.7	87.9

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-178167-M-1-E MS	Matrix Spike	82.1	100
440-178167-M-1-F MSD	Matrix Spike Duplicate	80.6	105
440-178169-1	Outfall009_20170227_Comp	81.4	106
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177394-A-1-L MS	Matrix Spike	63.1
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8
440-178167-M-1-G MS	Matrix Spike	74.3

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routing Outfall 009 comp

TestAmerica Job ID: 440-178169-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0
440-178169-1	Outfall009_20170227_Comp	67.1
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174323-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174323-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall011_20170123_Grab	440-174323-1	N/A	Water	1/23/2017 9:15:00 AM	E120.1, E1664, E624, SM2540F, SM9221F, SW8015D/V, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174323-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.

The following issues were noted:

- The correction on the original COC was not initialed and dated.
- Analysis for Human Bacteroidetes was subcontracted to Source Molecular.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 8015B— PURGEABLE AND EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS (TPHs)

L. Calvin of MEC^x reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Total Fuel Hydrocarbons (DVP-8, Rev. 0)*, EPA Method 8015B, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The preserved water sample was analyzed within 14 days for purgeable TPH (GRO), and the water sample was extracted within seven days of collection and analyzed within 40 days of extraction for extractable TPH (DRO).

III.2. CALIBRATION

Initial calibration %RSDs were within the method control limit of $\leq 20\%$, and the ICV and CCV %Ds were within $\leq 15\%$.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits for GRO and DRO of 80-120% and 45-120%, respectively.

III.3.3. SURROGATE RECOVERY

Recoveries were within laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^x evaluated method accuracy based on the respective GRO and DRO LCS results.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory reported two total petroleum hydrocarbon ranges: C₄-C₁₂ (GRO), and C₁₃-C₂₈ (DRO). Review indicated no issues with target compound range identification.



III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified. Review of the raw data did not indicate calculation or transcription errors. Nondetects are valid to the reporting limit.

IV. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

IV.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

IV.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

IV.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^x evaluated method accuracy based on the LCS results.

IV.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

IV.4.1. TRIP BLANKS

A trip blank was not identified for this SDG.

IV.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

IV.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

IV.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

IV.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

IV.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 22, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F and 9221F*, SAM348-357 (Human Bacteroides by Quantitative PCR), *EPA methods 1664A and 120.1*, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

V.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 8 hours for *E. coli*



- 28 days for specific conductance

The analytical holding time of 24-48 hours from collection for Human Bacteroides was exceeded in shipping. The positive result for Human Bacteroides was not qualified as this is a present/absent test.

V.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing, and biological controls were acceptable. No instrument calibration information was provided for specific conductance analysis.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to the biological method or settleable solids. The biological method negative control sample was acceptable.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM, settleable solids and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis; no sample results were qualified.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743231

Analysis Method E120.1

Sample Name Outfall011_20170123_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	71	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall011_20170123_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.1	1.4	mg/L	U	U	

Analysis Method E624

Sample Name Outfall011_20170123_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloro-1,1,2-trifluoroethane	N	354-23-4	ND	2.0	1.0	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	U	
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U
Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U
Cyclohexane	N	110-82-7	ND	2.0	1.0	ug/L	U	U
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U
m,p-Xylenes	N	179601-23-1	ND	1.0	0.50	ug/L	U	U
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
o-Xylene	N	95-47-6	ND	0.50	0.25	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	U
Trifluorotrchloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SAM348-357

Sample Name Outfall011_20170123_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	present			CEs/100			

Analysis Method SM2540F

Sample Name Outfall011_20170123_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

Analysis Method SM9221F

Sample Name Outfall011_20170123_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	170	1.8	1.8	mpn/100			

Analysis Method SW8015D

Sample Name Outfall011_20170123_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Petroleum Hydrocarbons (C13- C28)(DRO)	N	PHC1328	ND	0.48	0.096	mg/L	U	U	

Analysis Method SW8015V

Sample Name Outfall011_20170123_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-174323-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
PHC as Unknown/Waste Product, Light Range C4-C12	N	PHCML	ND	0.050	0.025	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174323-1

Client Project/Site: Annual Outfall 011 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/19/2017 2:09:23 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/19/2017 2:09:23 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174323-1	Outfall011_20170123_Grab	Water	01/23/17 09:15	01/23/17 15:50

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Job ID: 440-174323-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174323-1

Comments

No additional comments.

Receipt

The sample was received on 1/23/2017 3:50 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

Method Human Bacteroid: This method was subcontracted to Source Molecular. The subcontract laboratory certification is different from that of the facility issuing the final report.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-386278 and analytical batch 440-386838. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Client Sample ID: Outfall011_20170123_Grab

Lab Sample ID: 440-174323-1

Date Collected: 01/23/17 09:15

Matrix: Water

Date Received: 01/23/17 15:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/25/17 09:06	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Acrolein	ND		5.0	2.5	ug/L			01/25/17 09:06	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/25/17 09:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/25/17 13:38	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Benzene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Bromoform	ND		1.0	0.40	ug/L			01/25/17 13:38	1
Bromomethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Chloroethane	ND		1.0	0.40	ug/L			01/25/17 13:38	1
Chloroform	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Chloromethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/25/17 13:38	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Toluene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Trichloroethene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Cyclohexane	ND		2.0	1.0	ug/L			01/25/17 13:38	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/25/17 13:38	1
Naphthalene	ND		1.0	0.40	ug/L			01/25/17 13:38	1
o-Xylene	ND		0.50	0.25	ug/L			01/25/17 13:38	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/25/17 13:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	108		80 - 128		01/25/17 09:06	1
Dibromofluoromethane (Surr)	103		76 - 132		01/25/17 09:06	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/25/17 09:06	1
4-Bromofluorobenzene (Surr)	100		80 - 120		01/25/17 13:38	1
Dibromofluoromethane (Surr)	104		76 - 132		01/25/17 13:38	1
Toluene-d8 (Surr)	103		80 - 128		01/25/17 13:38	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Client Sample ID: Outfall011_20170123_Grab

Lab Sample ID: 440-174323-1

Date Collected: 01/23/17 09:15

Matrix: Water

Date Received: 01/23/17 15:50

Method: 624 - Volatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/27/17 02:09	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120					01/27/17 02:09	1
Dibromofluoromethane (Surr)	103		76 - 132					01/27/17 02:09	1
Toluene-d8 (Surr)	104		80 - 128					01/27/17 02:09	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/31/17 14:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		65 - 140					01/31/17 14:16	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.48	0.096	mg/L		01/26/17 07:43	01/27/17 08:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	62		45 - 120				01/26/17 07:43	01/27/17 08:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.1	1.4	mg/L		02/03/17 08:19	02/07/17 01:41	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	71		1.0	1.0	umhos/cm			01/26/17 08:22	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			01/24/17 12:01	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	170		1.8	1.8	MPN/100mL			01/23/17 16:47	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Client Sample ID: Outfall011_20170123_Grab

Lab Sample ID: 440-174323-1

Date Collected: 01/23/17 09:15

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	384233	01/25/17 09:06	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	384236	01/25/17 13:38	WC	TAL IRV
Total/NA	Analysis	624	RA	1	10 mL	10 mL	384675	01/27/17 02:09	WK	TAL IRV
Total/NA	Analysis	8015B		1	10 mL	10 mL	385442	01/31/17 14:16	JB	TAL IRV
Total/NA	Prep	3510C			1040 mL	1 mL	384522	01/26/17 07:43	L2A	TAL IRV
Total/NA	Analysis	8015B		1			384637	01/27/17 08:43	LMB	TAL IRV
Total/NA	Analysis	120.1		1			384519	01/26/17 08:22	XL	TAL IRV
Total/NA	Prep	1664A			975 mL	1000 mL	386278	02/03/17 08:19	L1A	TAL IRV
Total/NA	Analysis	1664A		1			386838	02/07/17 01:41	BAW	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	384076	01/24/17 12:01	ST	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384670		KRW	TAL IRV
								(Start) 01/23/17 16:47		
								(End) 01/26/17 15:06		

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384233/4

Matrix: Water

Analysis Batch: 384233

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/25/17 07:41	1
Acrolein	ND		5.0	2.5	ug/L			01/25/17 07:41	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/25/17 07:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 128		01/25/17 07:41	1
Dibromofluoromethane (Surr)	102		76 - 132		01/25/17 07:41	1
4-Bromofluorobenzene (Surr)	100		80 - 120		01/25/17 07:41	1

Lab Sample ID: LCS 440-384233/5

Matrix: Water

Analysis Batch: 384233

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	21.0		ug/L		84	37 - 150
Acrolein	25.0	19.4		ug/L		78	10 - 145
Acrylonitrile	250	248		ug/L		99	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	100		80 - 120

Lab Sample ID: 440-174334-A-4 MS

Matrix: Water

Analysis Batch: 384233

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	22.2		ug/L		89	10 - 140
Acrolein	ND		25.0	13.6		ug/L		54	10 - 147
Acrylonitrile	ND		250	262		ug/L		105	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	103		80 - 128
Dibromofluoromethane (Surr)	105		76 - 132
4-Bromofluorobenzene (Surr)	102		80 - 120

Lab Sample ID: 440-174334-A-4 MSD

Matrix: Water

Analysis Batch: 384233

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	22.7		ug/L		91	10 - 140	2	25
Acrolein	ND		25.0	13.9		ug/L		56	10 - 147	2	40
Acrylonitrile	ND		250	246		ug/L		98	38 - 144	6	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174334-A-4 MSD

Matrix: Water

Analysis Batch: 384233

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	107		80 - 128
Dibromofluoromethane (Surr)	104		76 - 132
4-Bromofluorobenzene (Surr)	105		80 - 120

Lab Sample ID: MB 440-384236/4

Matrix: Water

Analysis Batch: 384236

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/25/17 07:47	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Benzene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Bromoform	ND		1.0	0.40	ug/L			01/25/17 07:47	1
Bromomethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Chloroethane	ND		1.0	0.40	ug/L			01/25/17 07:47	1
Chloroform	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Chloromethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/25/17 07:47	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Toluene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Trichloroethene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Cyclohexane	ND		2.0	1.0	ug/L			01/25/17 07:47	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/25/17 07:47	1
Naphthalene	ND		1.0	0.40	ug/L			01/25/17 07:47	1
o-Xylene	ND		0.50	0.25	ug/L			01/25/17 07:47	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/25/17 07:47	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384236/4
Matrix: Water
Analysis Batch: 384236

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	94		80 - 120		01/25/17 07:47	1
Dibromofluoromethane (Surr)	108		76 - 132		01/25/17 07:47	1
Toluene-d8 (Surr)	104		80 - 128		01/25/17 07:47	1

Lab Sample ID: LCS 440-384236/5
Matrix: Water
Analysis Batch: 384236

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	24.3		ug/L		97	70 - 130
1,1,2,2-Tetrachloroethane	25.0	23.9		ug/L		95	63 - 130
1,1,2-Trichloroethane	25.0	26.4		ug/L		106	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	23.4		ug/L		93	60 - 140
1,1-Dichloroethane	25.0	24.2		ug/L		97	64 - 130
1,1-Dichloroethene	25.0	23.9		ug/L		96	70 - 130
1,2-Dichlorobenzene	25.0	23.5		ug/L		94	70 - 130
1,2-Dichloroethane	25.0	25.3		ug/L		101	57 - 138
1,2-Dichloropropane	25.0	23.5		ug/L		94	67 - 130
1,3-Dichlorobenzene	25.0	24.7		ug/L		99	70 - 130
1,4-Dichlorobenzene	25.0	23.2		ug/L		93	70 - 130
Benzene	25.0	23.8		ug/L		95	68 - 130
Bromoform	25.0	26.3		ug/L		105	60 - 148
Bromomethane	25.0	21.9		ug/L		87	64 - 139
Carbon tetrachloride	25.0	24.7		ug/L		99	60 - 150
Chlorobenzene	25.0	23.3		ug/L		93	70 - 130
Dibromochloromethane	25.0	26.2		ug/L		105	69 - 145
Chloroethane	25.0	22.8		ug/L		91	64 - 135
Chloroform	25.0	24.6		ug/L		99	70 - 130
Chloromethane	25.0	24.5		ug/L		98	47 - 140
cis-1,3-Dichloropropene	25.0	24.7		ug/L		99	70 - 133
Bromodichloromethane	25.0	25.5		ug/L		102	70 - 132
Ethylbenzene	25.0	23.4		ug/L		94	70 - 130
Methylene Chloride	25.0	25.9		ug/L		103	52 - 130
Tetrachloroethene	25.0	24.7		ug/L		99	70 - 130
Toluene	25.0	23.9		ug/L		96	70 - 130
trans-1,2-Dichloroethene	25.0	24.7		ug/L		99	70 - 130
trans-1,3-Dichloropropene	25.0	24.3		ug/L		97	70 - 132
Trichlorofluoromethane	25.0	25.0		ug/L		100	60 - 150
Vinyl chloride	25.0	21.8		ug/L		87	59 - 133
Trichloroethene	25.0	25.9		ug/L		104	70 - 130
cis-1,2-Dichloroethene	25.0	24.8		ug/L		99	70 - 133
Cyclohexane	25.0	23.9		ug/L		96	
m,p-Xylene	25.0	24.3		ug/L		97	70 - 130
Naphthalene	25.0	25.6		ug/L		103	60 - 140
o-Xylene	25.0	25.0		ug/L		100	70 - 130
Xylenes, Total	50.0	49.3		ug/L		99	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384236/5

Matrix: Water

Analysis Batch: 384236

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	92		80 - 120
Dibromofluoromethane (Surr)	107		76 - 132
Toluene-d8 (Surr)	103		80 - 128

Lab Sample ID: 440-174328-C-1 MS

Matrix: Water

Analysis Batch: 384236

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	24.5		ug/L		98	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	24.9		ug/L		100	63 - 130
1,1,2-Trichloroethane	ND		25.0	28.0		ug/L		112	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	23.1		ug/L		92	60 - 140
1,1-Dichloroethane	ND		25.0	24.8		ug/L		99	65 - 130
1,1-Dichloroethene	ND		25.0	23.4		ug/L		94	70 - 130
1,2-Dichlorobenzene	ND		25.0	24.1		ug/L		96	70 - 130
1,2-Dichloroethane	ND		25.0	26.0		ug/L		104	56 - 146
1,2-Dichloropropane	ND		25.0	24.5		ug/L		98	69 - 130
1,3-Dichlorobenzene	ND		25.0	25.2		ug/L		101	70 - 130
1,4-Dichlorobenzene	ND		25.0	23.3		ug/L		93	70 - 130
Benzene	ND		25.0	23.7		ug/L		95	66 - 130
Bromoform	ND		25.0	27.0		ug/L		108	59 - 150
Bromomethane	ND		25.0	20.8		ug/L		83	62 - 131
Carbon tetrachloride	ND		25.0	25.7		ug/L		103	60 - 150
Chlorobenzene	ND		25.0	23.7		ug/L		95	70 - 130
Dibromochloromethane	ND		25.0	26.5		ug/L		106	70 - 148
Chloroethane	ND		25.0	21.9		ug/L		88	68 - 130
Chloroform	ND		25.0	24.7		ug/L		99	70 - 130
Chloromethane	ND		25.0	24.1		ug/L		96	39 - 144
cis-1,3-Dichloropropene	ND		25.0	25.0		ug/L		100	70 - 133
Bromodichloromethane	ND		25.0	25.6		ug/L		102	70 - 138
Ethylbenzene	0.41	J,DX	25.0	24.4		ug/L		96	70 - 130
Methylene Chloride	ND		25.0	24.9		ug/L		100	52 - 130
Tetrachloroethene	ND		25.0	25.4		ug/L		102	70 - 137
Toluene	0.37	J,DX	25.0	24.3		ug/L		96	70 - 130
trans-1,2-Dichloroethene	ND		25.0	25.4		ug/L		102	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.6		ug/L		102	70 - 138
Trichlorofluoromethane	ND		25.0	28.6		ug/L		114	60 - 150
Vinyl chloride	ND		25.0	21.6		ug/L		86	50 - 137
Trichloroethene	ND		25.0	26.4		ug/L		105	70 - 130
cis-1,2-Dichloroethene	ND		25.0	25.4		ug/L		102	70 - 130
Cyclohexane	ND		25.0	23.8		ug/L		95	
m,p-Xylene	2.2		25.0	27.2		ug/L		100	70 - 133
Naphthalene	0.78	J,DX	25.0	27.8		ug/L		108	60 - 140
o-Xylene	1.2		25.0	27.2		ug/L		104	70 - 133
Xylenes, Total	3.4		50.0	54.4		ug/L		102	70 - 133

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174328-C-1 MS

Matrix: Water

Analysis Batch: 384236

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Lab Sample ID: 440-174328-C-1 MSD

Matrix: Water

Analysis Batch: 384236

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.3		ug/L		101	70 - 130	3	20
1,1,2,2-Tetrachloroethane	ND		25.0	23.2		ug/L		93	63 - 130	7	30
1,1,2-Trichloroethane	ND		25.0	27.0		ug/L		108	70 - 130	4	25
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	23.7		ug/L		95	60 - 140	2	20
1,1-Dichloroethane	ND		25.0	25.1		ug/L		100	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	24.8		ug/L		99	70 - 130	6	20
1,2-Dichlorobenzene	ND		25.0	24.7		ug/L		99	70 - 130	2	20
1,2-Dichloroethane	ND		25.0	25.4		ug/L		102	56 - 146	2	20
1,2-Dichloropropane	ND		25.0	24.0		ug/L		96	69 - 130	2	20
1,3-Dichlorobenzene	ND		25.0	25.9		ug/L		104	70 - 130	3	20
1,4-Dichlorobenzene	ND		25.0	24.0		ug/L		96	70 - 130	3	20
Benzene	ND		25.0	24.2		ug/L		97	66 - 130	2	20
Bromoform	ND		25.0	26.1		ug/L		105	59 - 150	3	25
Bromomethane	ND		25.0	22.5		ug/L		90	62 - 131	8	25
Carbon tetrachloride	ND		25.0	25.9		ug/L		103	60 - 150	1	25
Chlorobenzene	ND		25.0	24.0		ug/L		96	70 - 130	1	20
Dibromochloromethane	ND		25.0	26.5		ug/L		106	70 - 148	0	25
Chloroethane	ND		25.0	22.4		ug/L		89	68 - 130	2	25
Chloroform	ND		25.0	24.9		ug/L		100	70 - 130	1	20
Chloromethane	ND		25.0	25.2		ug/L		101	39 - 144	5	25
cis-1,3-Dichloropropene	ND		25.0	25.2		ug/L		101	70 - 133	1	20
Bromodichloromethane	ND		25.0	26.4		ug/L		106	70 - 138	3	20
Ethylbenzene	0.41	J,DX	25.0	24.3		ug/L		96	70 - 130	0	20
Methylene Chloride	ND		25.0	24.9		ug/L		100	52 - 130	0	20
Tetrachloroethene	ND		25.0	25.5		ug/L		102	70 - 137	0	20
Toluene	0.37	J,DX	25.0	24.4		ug/L		96	70 - 130	0	20
trans-1,2-Dichloroethene	ND		25.0	26.0		ug/L		104	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	24.7		ug/L		99	70 - 138	3	25
Trichlorofluoromethane	ND		25.0	27.8		ug/L		111	60 - 150	3	25
Vinyl chloride	ND		25.0	21.6		ug/L		86	50 - 137	0	30
Trichloroethene	ND		25.0	26.3		ug/L		105	70 - 130	0	20
cis-1,2-Dichloroethene	ND		25.0	26.3		ug/L		105	70 - 130	4	20
Cyclohexane	ND		25.0	23.8		ug/L		95		0	
m,p-Xylene	2.2		25.0	27.3		ug/L		100	70 - 133	0	25
Naphthalene	0.78	J,DX	25.0	26.6		ug/L		103	60 - 140	4	30
o-Xylene	1.2		25.0	27.1		ug/L		104	70 - 133	0	20
Xylenes, Total	3.4		50.0	54.4		ug/L		102	70 - 133	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174328-C-1 MSD

Matrix: Water

Analysis Batch: 384236

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Surrogate	MSD		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	103		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Lab Sample ID: MB 440-384675/4

Matrix: Water

Analysis Batch: 384675

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 19:41	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	99		80 - 120		01/26/17 19:41	1
Dibromofluoromethane (Surr)	103		76 - 132		01/26/17 19:41	1
Toluene-d8 (Surr)	103		80 - 128		01/26/17 19:41	1

Lab Sample ID: LCS 440-384675/6

Matrix: Water

Analysis Batch: 384675

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloro-1,1,2-trifluoroethane	25.0	19.3		ug/L		77	60 - 140

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	102		80 - 128

Lab Sample ID: 440-174617-A-2 MS

Matrix: Water

Analysis Batch: 384675

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloro-1,1,2-trifluoroethane	ND		25.0	18.9		ug/L		76	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	103		76 - 132
Toluene-d8 (Surr)	100		80 - 128

Lab Sample ID: 440-174617-A-2 MSD

Matrix: Water

Analysis Batch: 384675

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dichloro-1,1,2-trifluoroethane	ND		25.0	20.2		ug/L		81	60 - 140	7	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174617-A-2 MSD
Matrix: Water
Analysis Batch: 384675

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	99		80 - 128

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-385442/4
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/31/17 10:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		65 - 140		01/31/17 10:32	1

Lab Sample ID: LCS 440-385442/3
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.800	0.762		mg/L		95	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		65 - 140

Lab Sample ID: 440-174239-E-1 MS
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		0.800	0.791		mg/L		99	65 - 140

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	108		65 - 140

Lab Sample ID: 440-174239-E-1 MSD
Matrix: Water
Analysis Batch: 385442

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		0.800	0.794		mg/L		99	65 - 140	0	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	110		65 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-384522/1-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384522

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.50	0.10	mg/L		01/26/17 07:43	01/27/17 16:42	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	73		45 - 120				01/26/17 07:43	01/27/17 16:42	1

Lab Sample ID: LCS 440-384522/2-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384522

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
C10-C28	1.00	0.675		mg/L		67	40 - 115		
Surrogate	%Recovery	LCS Qualifier	Limits				%Rec.		
n-Octacosane	69		45 - 120						

Lab Sample ID: 440-174238-J-1-A MSD
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384522

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
C10-C28	0.12	J,DX	0.952	0.545		mg/L		45	40 - 120	5	30
Surrogate	%Recovery	MSD Qualifier	Limits					%Rec.		RPD	
n-Octacosane	62		45 - 120								

Lab Sample ID: 440-174238-K-1-A MS
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384522

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits		
C10-C28	0.12	J,DX	0.957	0.516		mg/L		41	40 - 120		
Surrogate	%Recovery	MS Qualifier	Limits					%Rec.			
n-Octacosane	58		45 - 120								

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-384519/3
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			01/26/17 08:22	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-384519/4
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	768		umhos/cm		100	90 - 110

Lab Sample ID: 440-174256-B-1 DU
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	110		105		umhos/cm		3	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-386278/1-A
Matrix: Water
Analysis Batch: 386838

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386278

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/03/17 08:19	02/07/17 01:41	1

Lab Sample ID: LCS 440-386278/2-A
Matrix: Water
Analysis Batch: 386838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386278

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.2		mg/L		88	78 - 114

Lab Sample ID: LCSD 440-386278/3-A
Matrix: Water
Analysis Batch: 386838

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 386278

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	36.5		mg/L		91	78 - 114	4	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

GC/MS VOA

Analysis Batch: 384233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	624	
MB 440-384233/4	Method Blank	Total/NA	Water	624	
LCS 440-384233/5	Lab Control Sample	Total/NA	Water	624	
440-174334-A-4 MS	Matrix Spike	Total/NA	Water	624	
440-174334-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 384236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	624	
MB 440-384236/4	Method Blank	Total/NA	Water	624	
LCS 440-384236/5	Lab Control Sample	Total/NA	Water	624	
440-174328-C-1 MS	Matrix Spike	Total/NA	Water	624	
440-174328-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 384675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1 - RA	Outfall011_20170123_Grab	Total/NA	Water	624	
MB 440-384675/4	Method Blank	Total/NA	Water	624	
LCS 440-384675/6	Lab Control Sample	Total/NA	Water	624	
440-174617-A-2 MS	Matrix Spike	Total/NA	Water	624	
440-174617-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

GC VOA

Analysis Batch: 385442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	8015B	
MB 440-385442/4	Method Blank	Total/NA	Water	8015B	
LCS 440-385442/3	Lab Control Sample	Total/NA	Water	8015B	
440-174239-E-1 MS	Matrix Spike	Total/NA	Water	8015B	
440-174239-E-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 384522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	3510C	
MB 440-384522/1-A	Method Blank	Total/NA	Water	3510C	
LCS 440-384522/2-A	Lab Control Sample	Total/NA	Water	3510C	
440-174238-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	3510C	
440-174238-K-1-A MS	Matrix Spike	Total/NA	Water	3510C	

Analysis Batch: 384637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	8015B	384522
MB 440-384522/1-A	Method Blank	Total/NA	Water	8015B	384522
LCS 440-384522/2-A	Lab Control Sample	Total/NA	Water	8015B	384522
440-174238-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	8015B	384522
440-174238-K-1-A MS	Matrix Spike	Total/NA	Water	8015B	384522

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

General Chemistry

Analysis Batch: 384076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 384519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	120.1	
MB 440-384519/3	Method Blank	Total/NA	Water	120.1	
LCS 440-384519/4	Lab Control Sample	Total/NA	Water	120.1	
440-174256-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 386278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	1664A	
MB 440-386278/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-386278/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-386278/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 386838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	1664A	386278
MB 440-386278/1-A	Method Blank	Total/NA	Water	1664A	386278
LCS 440-386278/2-A	Lab Control Sample	Total/NA	Water	1664A	386278
LCSD 440-386278/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	386278

Biology

Analysis Batch: 384670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174323-1	Outfall011_20170123_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 011 Grab

TestAmerica Job ID: 440-174323-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Human Fecal Toolbox ID™
Detection of the fecal Human gene biomarker for Human fecal contamination by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.
Date Received: January 25, 2017
Report Generated: February 7, 2017

SM #	Client #	Analysis Requested	Species	DNA Analytical Results
SM-7A25001	Outfall011_20170123_Grab	Human Bacteroidetes ID	Dorei	Present

Limitation of Damages – Repayment of Service Price

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Laboratory Comments

Positive Results

In sample(s) classified as positive, the human-associated Bacteroidetes gene biomarker(s) was detected in both test replicates suggesting that human fecal contamination is present in the water sample(s). The biomarker(s) serve as an indicator of the targeted fecal pollution, but the presence of the biomarker does not signify conclusively the presence of that form of fecal pollution. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

Human Fecal Reference Samples

The client is encouraged to submit samples from the surrounding wastewater facilities and/or septic systems in order to gain a better understanding of the concentration of the human-associated fecal Bacteroidetes genetic marker as well as the concentration of the general fecal Bacteroidetes genetic marker in the geographic region of interest. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

Each submitted water sample was filtered through 0.45 micron membrane filters. Each filter was placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample was homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol.

Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing the sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. ' All assays were run in duplicate.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and to reveal any false negatives or false positives. The accumulation of PCR product is detected and graphed in an amplification plot. If the fecal indicator organism is absent in the sample, this accumulation is not detected and the sample is considered negative. If accumulation of PCR product is detected, the sample is considered positive.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

Human Bacteroidetes ID™ Species: *B. stercoris*,
Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

¹Boehm, A., Fuhman, J., Mrse, R., Grant, S. **Tiered approach for identification of a human fecal pollution source at a recreational beach: case study at Avalon Bay, Catalina Island, California.** Environ Sci Technol. 2003 37: 673–680.

²Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

³Bernhard, A., Field, K. **A PCR assay to discriminate human and ruminant feces on the basis of host differences in Bacteroides-Prevotella genes encoding 16S rRNA.** Appl. Environ. Microbiol. 2000b 66: 4571-4574.

⁴Ahmed, w., Masters, N., Toze, S. **Consistency in the host specificity and host sensitivity of the Bacteroides HF183 marker for sewage pollution tracking.** Lett. Appl. Microbiol. 2012 55: 283-289.

⁵Scott, T., Rose, J., Jenkins, T., Farrah, S., Lukasik, J. **Microbial Source Tracking: Current Methodology and Future Directions.** Appl. Environ. Microbiol. 2002 68: 5796-5803.

⁶Bernhard, A., Field, K. **Identification of nonpoint sources of fecal pollution in coastal waters by using host-specific 16S ribosomal DNA genetic markers from fecal anaerobes.** Appl. Environ. Microbiol. 2000a 66: 1587-1594.

⁷Fogarty, L., Voytek, M. **A Comparison of Bacteroides-Prevotella 16S rRNA Genetic Markers for Fecal Samples from Different Animal Species.** Appl. Environ. Microbiol. 2005 71: 5999-6007.

⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., et al. **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174323-1

Login Number: 174323

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174433-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MECX Project No.:** 1272.003H.01**Sample Delivery Group:** 440-174433-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall011_20170124_Comp	440-174433-1	N/A	Water	1/24/2017 9:00:00 AM	DV-WC-0077, E1613B, E180.1, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2340, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5310B, SM5540, SW8260SIM
Outfall011_20170124_Comp_F	440-174433-2	N/A	Water	1/24/2017 9:00:00 AM	E200.7, E200.8, E245.1, SM2340B



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174433-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine, TA-Denver, and TA-Sacramento.
- Samples for method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.
- Samples for monomethyl hydrazine (method DV-WC-0077) analysis were transferred to TestAmerica – Denver.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates, times and sample numbers on the COC do not match the revised collection dates, times and sample numbers used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 1,2,3,4,7,8,9-HpCDF, 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD and 2,3,4,7,8-PeCDF, and detects for all totals except PeCDD. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentration of OCDD was not sufficient to qualify the sample result for OCDD above the reporting limit. The reviewer verified that peaks comprising totals HpCDD, TCDD, and TCDF in the method blank were the same peaks comprising the totals in sample Outfall011_20170124_Comp. The results for totals HpCDD, TCDD, and



TCDF were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total results in the sample included more peaks than the method blank totals. The sample results for totals HpCDF, HxCDD and HxCDF were therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Reported EMPCs for isomers 1,2,3,4,7,8-HpCDF and 1,2,3,7,8-PeCDD were qualified as estimated nondetects (UJ). Totals HxCDD, HxCDF and PeCDD containing EMPC peaks were qualified as estimated (J).

IV. METHODS 200.7, 200.8, 245.1 AND SM2340— METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^x reviewed the SDG on March 23, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8, and 245.1*, *Standard Method 2340B*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall011_20170124_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis approximately 3 days after receipt. All dissolved metals, dissolved mercury and hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results with the exception of dissolved antimony. The antimony result for sample Outfall011_20170124_Comp_F was a detect below the reporting limit and was qualified as a nondetect (U).

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples and laboratory control sample duplicate recoveries were within the method control limits of 85-115% and RPDs were $\leq 20\%$.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall011_20170124_Comp for all methods. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively, with the exception of

recoveries (205%/319%) and RPD (27%) for total iron). The result for total iron in sample Outfall011_20170124_Comp was qualified as estimated with high potential bias (J+).

The laboratory analyzed a post digestion spike on sample Outfall011_20170124_Comp_F. All recovery control limits were met.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

E. Wessling of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration



verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$ with the exception of endrin aldehyde in the ICV with a %D of 16.3%. Endrin aldehyde was qualified as an estimated nondetect (UJ) in the site sample.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^x evaluated method accuracy based on the LCS results.

V.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.



VI. EPA METHOD 314.0 — PERCHLORATE

Marcia Hilchey of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on the sample from this SDG. Recoveries and the RPD were within method-established QC limits of 80-120% and $\leq 15\%$, respectively.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.



VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with exceptions noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$, with the exception of the ICV $\%D$ of -34.2 for benzidine. The nondetect sample result for benzidine was qualified as estimated (UJ) in sample Outfall011_20170124_Comp.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1 METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2 LABORATORY CONTROL SAMPLES

The LCS/LCSD had recoveries above the control limits of 5-66% for benzidine, at 73% and 71%, respectively; however, as benzidine was not detected in the sample, no qualification was necessary. Recoveries were below the control limits in the LCSD only, for bis(2-chloroethoxy)methane, 3,3'-dichlorobenzidine, and n-nitrosodiphenylamine. Qualifications were not assigned for the recovery outliers in only the LCSD of the pair; however, due to recovery discrepancies, the following RPDs exceeded the control limit of $\leq 35\%$: bis(2-chloroethoxy)methane (88%), 3,3'-dichlorobenzidine (183%), benzo(a)pyrene (56%), 1,2-diphenylhydrazine (53%), and n-nitrosodiphenylamine (50%) The nondetect results for the RPD outliers were qualified as estimated (UJ) in sample Outfall011_20170124_Comp. Remaining recoveries and RPDs were within the laboratory control limits.

VII.3.3 SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site

samples. Findings associated with field QC samples are summarized below:

VII.4.1 FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2 FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHOD 8260B SIM—1,4-DIOXANE

L. Calvin of MEC^x reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 8260B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VIII.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

VIII.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.



Calibration criteria were met. The initial calibration average RRF and the ICV and continuing calibration RRFs were ≥ 0.05 for 1,4-dioxane. The initial calibration %RSD was $\leq 15\%$. The second source ICV and CCV %Ds were within the control limit of $\leq 20\%$.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compound 1,4-dioxane was not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the laboratory control limits.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

VIII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VIII.4.1. TRIP BLANKS

A trip blank was not identified for this SDG.

VIII.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standard: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*; EPA Methods 180.1, 218.6, 300.0, and 821-R-02-013; Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5310B, 5540C and 5210B; DV-WC-0077; and the National Functional Guidelines for Inorganic Superfund Data Review (2014).

IX.1. HOLDING TIMES

Hexavalent chromium was analyzed approximately 2 hours past the 24-hour holding time requirement. Samples for monomethyl hydrazine (methyl hydrazine) analysis should be filtered and acidified upon receipt at the laboratory; however, filtration and acidification did not occur until 48 hours after receipt. Results for hexavalent chromium and monomethyl hydrazine were qualified as estimated (UJ). The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, fluoride, and sulfate
- 48 hours for nitrate and nitrite
- 48 hours for Biological Oxygen Demand (BOD)
- 48 hours for turbidity
- 28 days for ammonia
- 28 days for total organic carbon (TOC)
- 36 hours for chronic toxicity
- 48 hours for surfactants (MBAS)

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within laboratory control limits. The MRL recoveries for hexavalent chromium, turbidity and ammonia were within the laboratory control limits. Where analytical balance calibration logs were not provided by the laboratory, batch notes indicated that the balance calibration was verified. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.



IX.3. QUALITY CONTROL SAMPLES

IX.3.1 METHOD BLANKS

The method blanks and calibration blanks had no detects.

IX.3.2 LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The LCS/LCSD RPD was within the laboratory control limit for BOD.

IX.3.3 LABORATORY DUPLICATES

Laboratory duplicate analysis was performed on the sample in this SDG for turbidity. The RPD met the laboratory control limit.

IX.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG for anions and MBAS. Recoveries and RPDs met laboratory control limits.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDL.

The laboratory analyzed and reported two results for surfactants (MBAS) for sample Outfall011_20170124_Comp. The higher of the two results (0.14mg/L) was retained as it is the more environmentally conservative value and there were no technical differences between the results. The lower result (0.11mg/L) was rejected.

No raw data was presented in the SDG for turbidity analysis; therefore, reported sample results could not be verified.

IX.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401744331

Analysis Method DV-WC-0077

Sample Name Outfall011_20170124_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/24/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Methyl hydrazine	N	60-34-4	ND	10	0.25	ug/L	UBU	UJ	H

Analysis Method E1613B

Sample Name Outfall011_20170124_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/24/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000016	0.000095	0.00000043	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00012	0.000095	0.00000086	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000054	0.000048	0.00000034	ug/L	J,DXMQ	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000013	0.000048	0.00000060	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000076	0.000048	0.00000049	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000063	0.000048	0.00000028	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000048	0.00000023	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000069	0.000048	0.00000027	ug/L	J,DXqMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000085	0.000048	0.00000023	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000048	0.00000025	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000078	0.000048	0.00000018	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000048	0.00000027	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000039	0.000048	0.00000023	ug/L	J,DXq	UJ	*III
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000043	0.000048	0.00000022	ug/L	J,DXqMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000048	0.00000028	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000037	0.000095	0.00000014	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000095	0.00000048	ug/L	U	U	

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Analysis Method E1613B

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.0000095	0.00000021	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000013	0.000048	0.00000042	ug/L	J,DXqMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000028	0.000048	0.00000060	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000030	0.000048	0.00000025	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000028	0.000048	0.00000021	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000048	0.00000027	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000039	0.000048	0.00000023	ug/L	J,DXq	J	DNQ, *III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000037	0.0000095	0.00000014	ug/L	J,DXMB	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000041	0.0000095	0.00000021	ug/L	J,DXqMB	U	B

Analysis Method E180.1

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	34	0.50	0.20	NTU			

Analysis Method E200.7

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Barium	T	7440-39-3	0.018	0.010	0.0050	mg/L			
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.14	0.050	0.025	mg/L			
Chromium	T	7440-47-3	ND	5.0	2.5	ug/L	U	U	
Cobalt	T	7440-48-4	ND	10	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.77	0.10	0.050	mg/L		J+	Q, Q1
Manganese	T	7439-96-5	33	20	10	ug/L			
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	11	20	10	ug/L	J,DX	J	DNQ

Analysis Method E200.7**Sample Name** Outfall011_20170124_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Barium	D	7440-39-3	0.0097	0.010	0.0050	mg/L	J,DXQP	J	DNQ, H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Boron	D	7440-42-8	0.12	0.050	0.025	mg/L	QP	J	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Cobalt	D	7440-48-4	ND	10	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	0.14	0.10	0.050	mg/L	QP	J	H
Manganese	D	7439-96-5	ND	20	10	ug/L	UQP	UJ	H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Analysis Method E200.8**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	ND	2.0	0.50	ug/L	U	U	
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.8	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.1	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Sample Name Outfall011_20170124_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	0.52	2.0	0.50	ug/L	J,DXQP	UJ	H, B
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	1.9	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Analysis Method E218.6**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	ND	1.0	0.25	ug/L	UBU	UJ	H

Analysis Method E245.1**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall011_20170124_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	5.1	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrate (as N)	N	14797-55-8	1.3	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.3	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	12	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0050	0.0040	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0050	0.0030	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.010	0.0040	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0050	0.0015	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0050	0.0025	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.50	0.25	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.50	0.25	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.50	0.25	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.50	0.25	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.50	0.25	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.50	0.25	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.50	0.25	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.010	0.0040	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.10	0.080	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0050	0.0035	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0050	0.0020	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0050	0.0030	ug/L	U	U	
Endosulfan II	N	33213-65-9	ND	0.0050	0.0020	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.010	0.0030	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0050	0.0020	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.010	0.0020	ug/L	U	UJ	C
gamma-BHC (Lindane)	N	58-89-9	ND	0.010	0.0030	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.010	0.0030	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0050	0.0025	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.50	0.25	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	1.01	0.503	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.503	0.201	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	1.01	0.503	ug/L	UBA	UJ	L1
1,3-Dichlorobenzene	N	541-73-1	ND	0.503	0.201	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.503	0.201	ug/L	U	U	

Analysis Method E625

2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.503	0.201	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	1.01	0.503	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	2.01	1.01	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	2.01	1.01	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	5.03	2.01	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.03	2.01	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2	ND	5.03	2.01	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	ND	0.503	0.201	ug/L	U	U	
2-Chlorophenol	N	95-57-8	ND	1.01	0.503	ug/L	U	U	
2-Nitrophenol	N	88-75-5	ND	2.01	1.01	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.03	2.01	ug/L	ULRBA	UJ	L1
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	5.03	2.01	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3	ND	1.01	0.503	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	ND	2.01	0.201	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.503	0.201	ug/L	U	U	
4-Nitrophenol	N	100-02-7	ND	5.03	2.01	ug/L	U	U	
Acenaphthene	N	83-32-9	ND	0.503	0.201	ug/L	U	U	
Acenaphthylene	N	208-96-8	ND	0.503	0.201	ug/L	U	U	
Anthracene	N	120-12-7	ND	0.503	0.201	ug/L	U	U	
Benzidine	N	92-87-5	ND	10.1	5.03	ug/L	ULQ	UJ	C
Benzo(a)anthracene	N	56-55-3	ND	5.03	2.01	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	ND	2.01	0.503	ug/L	UBA	UJ	L1
Benzo(b)fluoranthene	N	205-99-2	ND	2.01	1.01	ug/L	U	U	
Benzo(g,h,i)perylene	N	191-24-2	ND	5.03	2.01	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9	ND	0.503	0.251	ug/L	U	U	
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.503	0.201	ug/L	ULRBA	UJ	L1
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.503	0.201	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.03	2.01	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	ND	5.03	2.01	ug/L	U	U	
Chrysene	N	218-01-9	ND	0.503	0.201	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	ND	0.503	0.251	ug/L	U	U	
Diethyl phthalate	N	84-66-2	ND	1.01	0.503	ug/L	U	U	
Dimethyl phthalate	N	131-11-3	ND	0.503	0.251	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2	ND	2.01	1.01	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0	ND	5.03	2.01	ug/L	U	U	
Fluoranthene	N	206-44-0	ND	0.503	0.201	ug/L	U	U	
Fluorene	N	86-73-7	ND	0.503	0.201	ug/L	U	U	
Hexachlorobenzene	N	118-74-1	ND	1.01	0.503	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3	ND	2.01	0.503	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4	ND	5.03	2.01	ug/L	U	U	
Hexachloroethane	N	67-72-1	ND	3.02	0.503	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	2.01	1.01	ug/L	U	U	
Isophorone	N	78-59-1	ND	1.01	0.503	ug/L	U	U	

Analysis Method E625

Naphthalene	N	91-20-3	ND	1.01	0.503	ug/L	U	U	
Nitrobenzene	N	98-95-3	ND	1.01	0.503	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	2.01	1.01	ug/L	U	U	
N-Nitrosodi-n-propylamine	N	621-64-7	ND	2.01	1.01	ug/L	U	U	
N-Nitrosodiphenylamine	N	86-30-6	ND	1.01	0.503	ug/L	ULRBA	UJ	L1
Pentachlorophenol	N	87-86-5	ND	2.01	1.01	ug/L	U	U	
Phenanthrene	N	85-01-8	ND	0.503	0.201	ug/L	U	U	
Phenol	N	108-95-2	ND	1.01	0.503	ug/L	U	U	
Pyrene	N	129-00-0	ND	0.503	0.201	ug/L	U	U	

Analysis Method EPA-821-R-02-013

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	-8.25			% SURV			

Analysis Method SM2340

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	36	0.33	0.17	mg/L			

Sample Name Outfall011_20170124_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	31	0.33	0.17	mg/L		J	H

Analysis Method SM2540C

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	110	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	33	3.3	1.7	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method SM5210B**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD)	N	BOD	1.6	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method SM5310B**Sample Name** Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/24/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	8.1	1.0	0.65	mg/L			

Analysis Method **SM5540**

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.14	0.10	0.050	mg/L			
Surfactants as MBAS	N	SURFASMBAS	0.11	0.10	0.050	mg/L		R	D

Analysis Method **SW8260SIM**

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,4-Dioxane	N	123-91-1	ND	2.0	0.50	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174433-1

Client Project/Site: Boeing SSFL NPDES Outfall 011 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/19/2017 4:26:39 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/19/2017 4:26:39 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174433-1	Outfall011_20170124_Comp	Water	01/24/17 09:00	01/24/17 12:15
440-174433-2	Outfall011_20170124_Comp_F	Water	01/24/17 09:00	01/24/17 12:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Job ID: 440-174433-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174433-1

Comments

No additional comments

Receipt

The samples were received on 1/24/2017 12:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.0° C, 1.2° C and 1.9° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385063 and analytical batch 440-385461. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 440-385063 and analytical batch 440-385461 recovered outside control limits for benzidine. This analyte was biased high in the LCS/LCSD and was not detected in the associated samples; therefore, the data have been reported.

Method(s) 625: The laboratory control sample duplicate (LCSD) for preparation batch 440-385063 and analytical batch 440-385461 failed below acceptance limits for the following analytes: 3,3'-dichlorobenzidine; N-nitrosodiphenylamine; and bis (2-chloroethoxy)methane. These analytes are considered poor performers for preparation method 3520C. The affected samples, 440-174321-1 and 440-174433-1, could not be reextracted within hold times and are reported with possible low bias for the failing analytes.

Method(s) 625: The %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 440-385063 recovered outside control limits for the following analytes: 3,3'-dichlorobenzidine; 1,2-diphenylhydrazine; N-nitrosodiphenylamine; bis(2-chloroethoxy)methane; and benzo(a)pyrene. The affected samples, 440-174321-1 and 174433-1, could not be reextracted within hold times.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 218.6: The following sample was analyzed outside of holding time due to initial run sample had J flag value and CCV is biased high: Outfall011_20170124_Comp (440-174433-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-385116 and analytical batch 440-385441. See LCS and LCSD to provide data precision for this batch. (LCS 440-385116/4-A)

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 440-385116 and analytical batch 440-385463. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Job ID: 440-174433-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Dioxin

Method(s) 1613B: The laboratory control sample (LCS) for 320-148436 recovered outside control limits for 1,2,3,4,6,7,8-HpCDF. The analyte was biased high in the LCS and not detected above the reporting limit (RL) in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

Method(s) 200.2: limited sample, so a duplicate of LCS is needed for the digestion.

Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 440-385834 and analytical batch 440-386191 were outside control limits for Iron. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample recovery was within acceptance limits.(440-174433-A-1-C MS) and (440-174433-A-1-D MSD)

Method(s) 200.2: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-384878 and 440-386045.

Method(s) 200.7 Rev 4.4: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 440-384878, 440-384878 and 440-386043 and analytical batch 440-386370.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) Filtration: The following sample was prepared outside of preparation holding time due to logistical challenges of shipping the samples from Irvine to Denver such that the samples arrived in Denver outside of the preservation holding time:
Outfall011_20170124_Comp (440-174433-1). Hydrazines by IC, DV-WC-0077, preparation batch 280-360316.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			02/01/17 01:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	89		80 - 120					02/01/17 01:07	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Acenaphthylene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Anthracene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Benzidine	ND	LQ	10.1	5.03	ug/L		01/29/17 11:31	01/31/17 19:39	1
Benzo[a]anthracene	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Benzo[b]fluoranthene	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Benzo[k]fluoranthene	ND		0.503	0.251	ug/L		01/29/17 11:31	01/31/17 19:39	1
Benzo[a]pyrene	ND	BA	2.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Bis(2-chloroethoxy)methane	ND	LR BA	0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Bis(2-chloroethyl)ether	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Bis(2-ethylhexyl) phthalate	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
4-Bromophenyl phenyl ether	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Butyl benzyl phthalate	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
4-Chloro-3-methylphenol	ND		2.01	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
2-Chloronaphthalene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
2-Chlorophenol	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
4-Chlorophenyl phenyl ether	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Chrysene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Dibenz(a,h)anthracene	ND		0.503	0.251	ug/L		01/29/17 11:31	01/31/17 19:39	1
Di-n-butyl phthalate	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
1,2-Dichlorobenzene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
1,3-Dichlorobenzene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
1,4-Dichlorobenzene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
3,3'-Dichlorobenzidine	ND	LR BA	5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
2,4-Dichlorophenol	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Diethyl phthalate	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
2,4-Dimethylphenol	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Dimethyl phthalate	ND		0.503	0.251	ug/L		01/29/17 11:31	01/31/17 19:39	1
4,6-Dinitro-2-methylphenol	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
2,4-Dinitrophenol	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
2,4-Dinitrotoluene	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
2,6-Dinitrotoluene	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Di-n-octyl phthalate	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
1,2-Diphenylhydrazine(as Azobenzene)	ND	BA	1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Fluoranthene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Fluorene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Hexachlorobenzene	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Hexachlorobutadiene	ND		2.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Hexachloroethane	ND		3.02	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Hexachlorocyclopentadiene	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Indeno[1,2,3-cd]pyrene	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Isophorone	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Nitrobenzene	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
2-Nitrophenol	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
4-Nitrophenol	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
N-Nitrosodimethylamine	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
N-Nitrosodiphenylamine	ND	LR BA	1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
N-Nitrosodi-n-propylamine	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Pentachlorophenol	ND		2.01	1.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
Phenanthrene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Phenol	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Pyrene	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
1,2,4-Trichlorobenzene	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
2,4,6-Trichlorophenol	ND		1.01	0.503	ug/L		01/29/17 11:31	01/31/17 19:39	1
Benzo[g,h,i]perylene	ND		5.03	2.01	ug/L		01/29/17 11:31	01/31/17 19:39	1
bis (2-chloroisopropyl) ether	ND		0.503	0.201	ug/L		01/29/17 11:31	01/31/17 19:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		50 - 120				01/29/17 11:31	01/31/17 19:39	1
2-Fluorophenol	66		30 - 120				01/29/17 11:31	01/31/17 19:39	1
2,4,6-Tribromophenol	82		40 - 120				01/29/17 11:31	01/31/17 19:39	1
Nitrobenzene-d5	74		45 - 120				01/29/17 11:31	01/31/17 19:39	1
Terphenyl-d14	71		37 - 144				01/29/17 11:31	01/31/17 19:39	1
Phenol-d6	72		35 - 120				01/29/17 11:31	01/31/17 19:39	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 14:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	64		29 - 115				01/30/17 07:40	01/31/17 14:07	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		01/30/17 07:40	01/31/17 13:14	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/30/17 07:40	01/31/17 13:14	1
beta-BHC	ND		0.010	0.0040	ug/L		01/30/17 07:40	01/31/17 13:14	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/30/17 07:40	01/31/17 13:14	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/30/17 07:40	01/31/17 13:14	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/30/17 07:40	01/31/17 13:14	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/30/17 07:40	01/31/17 13:14	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/30/17 07:40	01/31/17 13:14	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/30/17 07:40	01/31/17 13:14	1
Endrin	ND		0.0050	0.0020	ug/L		01/30/17 07:40	01/31/17 13:14	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/30/17 07:40	01/31/17 13:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/30/17 07:40	01/31/17 13:14	1
Heptachlor	ND		0.010	0.0030	ug/L		01/30/17 07:40	01/31/17 13:14	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/30/17 07:40	01/31/17 13:14	1
Toxaphene	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:14	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/30/17 07:40	01/31/17 13:14	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/30/17 07:40	01/31/17 13:14	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/30/17 07:40	01/31/17 13:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	63		10 - 150	01/30/17 07:40	01/31/17 13:14	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND	BU	1.0	0.25	ug/L			01/25/17 10:55	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.1		0.50	0.25	mg/L			01/24/17 17:15	1
Nitrate as N	1.3		0.11	0.055	mg/L			01/24/17 17:15	1
Fluoride	ND		0.50	0.25	mg/L			01/24/17 17:15	1
Nitrite as N	ND		0.15	0.070	mg/L			01/24/17 17:15	1
Sulfate	12		0.50	0.25	mg/L			01/24/17 17:15	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/25/17 10:59	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.3		0.15	0.070	mg/L			01/31/17 15:46	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000095	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,7,8-PeCDD	0.00000039	J,DX q	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,7,8-PeCDF	ND		0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
2,3,4,7,8-PeCDF	ND		0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,4,7,8-HxCDD	ND		0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,6,7,8-HxCDD	0.00000085	J,DX q MB	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,7,8,9-HxCDD	0.00000078	J,DX MB	0.000048	0.0000001	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,4,7,8-HxCDF	0.00000063	J,DX q MB	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,6,7,8-HxCDF	0.00000069	J,DX q MB	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,7,8,9-HxCDF	ND		0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	0.0000043	J,DX q MB	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,4,6,7,8-HpCDD	0.000013	J,DX MB	0.000048	0.0000006	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,4,6,7,8-HpCDF	0.0000054	J,DX MB	0.000048	0.0000003	ug/L		01/31/17 13:13	02/02/17 00:14	1
1,2,3,4,7,8,9-HpCDF	0.0000076	J,DX q	0.000048	0.0000004	ug/L		01/31/17 13:13	02/02/17 00:14	1
OCDD	0.00012	MB	0.000095	0.0000008	ug/L		01/31/17 13:13	02/02/17 00:14	1
OCDF	0.000016	J,DX MB	0.000095	0.0000004	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total TCDD	0.00000041	J,DX q MB	0.0000095	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total TCDF	0.00000037	J,DX MB	0.0000095	0.0000001	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total PeCDD	0.00000039	J,DX q	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total PeCDF	ND		0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total HxCDD	0.0000028	J,DX q MB	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total HxCDF	0.0000030	J,DX q MB	0.000048	0.0000002	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total HpCDD	0.000028	J,DX MB	0.000048	0.0000006	ug/L		01/31/17 13:13	02/02/17 00:14	1
Total HpCDF	0.000013	J,DX q MB	0.000048	0.0000004	ug/L		01/31/17 13:13	02/02/17 00:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164	01/31/17 13:13	02/02/17 00:14	1
13C-2,3,7,8-TCDF	56		24 - 169	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,7,8-PeCDD	63		25 - 181	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,7,8-PeCDF	59		24 - 185	01/31/17 13:13	02/02/17 00:14	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,6,7,8-HxCDF	69		26 - 123	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	01/31/17 13:13	02/02/17 00:14	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,4,6,7,8-HpCDD	66		23 - 140	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,4,6,7,8-HpCDF	71		28 - 143	01/31/17 13:13	02/02/17 00:14	1
13C-1,2,3,4,7,8,9-HpCDF	67		26 - 138	01/31/17 13:13	02/02/17 00:14	1
13C-OCDD	65		17 - 157	01/31/17 13:13	02/02/17 00:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/31/17 13:13	02/02/17 00:14	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000095	0.0000004	ug/L		01/31/17 13:13	02/02/17 16:48	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	57		24 - 169	01/31/17 13:13	02/02/17 16:48	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197	01/31/17 13:13	02/02/17 16:48	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:57	1
Boron	0.14		0.050	0.025	mg/L		02/01/17 16:14	02/02/17 17:57	1
Barium	0.018		0.010	0.0050	mg/L		02/01/17 16:14	02/02/17 17:57	1
Beryllium	ND		2.0	1.0	ug/L		02/01/17 16:14	02/02/17 17:57	1
Cobalt	ND		10	2.5	ug/L		02/01/17 16:14	02/02/17 17:57	1
Chromium	ND		5.0	2.5	ug/L		02/01/17 16:14	02/02/17 17:57	1
Iron	0.77		0.10	0.050	mg/L		02/01/17 16:14	02/02/17 17:57	1
Manganese	33		20	10	ug/L		02/01/17 16:14	02/02/17 17:57	1
Nickel	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:57	1
Vanadium	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:57	1
Zinc	11	J,DX	20	10	ug/L		02/01/17 16:14	02/02/17 17:57	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/01/17 16:19	02/03/17 11:38	1
Copper	2.8		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:38	1
Lead	1.1		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:38	1
Antimony	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:38	1
Selenium	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:38	1
Thallium	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:38	1
Silver	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:38	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/25/17 12:31	01/26/17 14:04	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	36		0.33	0.17	mg/L			02/06/17 01:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	34		0.50	0.20	NTU			01/25/17 08:55	5
Monomethyl Hydrazine	ND	BU	10	0.25	ug/L		01/27/17 16:42	02/10/17 01:00	1
Total Dissolved Solids	110		10	5.0	mg/L			01/27/17 11:44	1
Total Suspended Solids	33		3.3	1.7	mg/L			01/30/17 14:17	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 18:06	1
Total Organic Carbon	8.1		1.0	0.65	mg/L			01/25/17 09:50	1
Methylene Blue Active Substances	0.14		0.10	0.050	mg/L			01/24/17 22:32	1
Biochemical Oxygen Demand	1.6	J,DX	2.0	0.50	mg/L			01/24/17 16:41	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp_F

Lab Sample ID: 440-174433-2

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		02/02/17 10:39	02/03/17 11:46	1
Boron	0.12	QP	0.050	0.025	mg/L		02/02/17 10:39	02/03/17 11:46	1
Barium	0.0097	J,DX QP	0.010	0.0050	mg/L		02/02/17 10:39	02/03/17 11:46	1
Beryllium	ND	QP	2.0	1.0	ug/L		02/02/17 10:39	02/03/17 11:46	1
Cobalt	ND	QP	10	2.5	ug/L		02/02/17 10:39	02/03/17 11:46	1
Chromium	ND	QP	5.0	2.5	ug/L		02/02/17 10:39	02/03/17 11:46	1
Iron	0.14	QP	0.10	0.050	mg/L		02/02/17 10:39	02/03/17 11:46	1
Manganese	ND	QP	20	10	ug/L		02/02/17 10:39	02/03/17 11:46	1
Nickel	ND	QP	10	5.0	ug/L		02/02/17 10:39	02/03/17 11:46	1
Vanadium	ND	QP	10	5.0	ug/L		02/02/17 10:39	02/03/17 11:46	1
Zinc	ND	QP	20	10	ug/L		02/02/17 10:39	02/03/17 11:46	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/02/17 10:40	02/03/17 17:18	1
Copper	1.9	J,DX QP	2.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:18	1
Lead	ND	QP	1.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:18	1
Antimony	0.52	J,DX QP	2.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:18	1
Selenium	ND	QP	2.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:18	1
Thallium	ND	QP	1.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:18	1
Silver	ND	QP	1.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:18	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:55	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	31		0.33	0.17	mg/L			02/06/17 01:36	1

Method Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method	Method Description	Protocol	Laboratory
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
DV-WC-0077	Hydrazine, Ion Chromatography	TAL-DEN	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	10 mL	10 mL	385626	02/01/17 01:07	GK	TAL IRV
Total/NA	Prep	625			995 mL	2 mL	385063	01/29/17 11:31	BMN	TAL IRV
Total/NA	Analysis	625		1			385461	01/31/17 19:39	DF	TAL IRV
Total/NA	Prep	608			995 mL	2 mL	385116	01/30/17 07:40	BMN	TAL IRV
Total/NA	Analysis	608 PCB LL		1			385441	01/31/17 14:07	JM	TAL IRV
Total/NA	Prep	608			995 mL	2 mL	385116	01/30/17 07:40	BMN	TAL IRV
Total/NA	Analysis	608 Pesticides		1			385463	01/31/17 13:14	KS	TAL IRV
Total/NA	Analysis	218.6		1			384226	01/25/17 10:55	MN	TAL IRV
Total/NA	Analysis	300.0		1			384051	01/24/17 17:15	NTN	TAL IRV
Total/NA	Analysis	300.0		1			384052	01/24/17 17:15	NTN	TAL IRV
Total/NA	Analysis	314.0		1			384264	01/25/17 10:59	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385558	01/31/17 15:46	NN	TAL IRV
Total/NA	Prep	1613B			1049.5 mL	20 uL	148436	01/31/17 13:13	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148646	02/02/17 00:14	KSS	TAL SAC
Total/NA	Prep	1613B	RA		1049.5 mL	20 uL	148436	01/31/17 13:13	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148816	02/02/17 16:48	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	385834	02/01/17 16:14	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			386191	02/02/17 17:57	EN	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	385835	02/01/17 16:19	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			386381	02/03/17 11:38	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384334	01/25/17 12:31	DB	TAL IRV
Total/NA	Analysis	245.1		1			384694	01/26/17 14:04	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			386100	02/06/17 01:36	A1S	TAL IRV
Total/NA	Analysis	180.1		5			384268	01/25/17 08:55	RB	TAL IRV
Total/NA	Prep	Filtration			30 mL	30 mL	360316	01/27/17 16:42	MPS	TAL DEN
Total/NA	Analysis	DV-WC-0077		1	4.5 mL	5 mL	361637	02/10/17 01:00	MPS	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384875	01/27/17 11:44	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	300 mL	1000 mL	385245	01/30/17 14:17	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	384650	01/26/17 15:00	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384744	01/26/17 20:29	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	384965	01/27/17 18:06	EN	TAL IRV
Total/NA	Analysis	SM 5310B		1			384772	01/25/17 09:50	YZ	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	384214	01/24/17 22:32	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	384214	01/24/17 22:32	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			384132	01/24/17 16:41	MMP	TAL IRV

Client Sample ID: Outfall011_20170124_Comp_F

Lab Sample ID: 440-174433-2

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Client Sample ID: Outfall011_20170124_Comp_F

Lab Sample ID: 440-174433-2

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	200.2			25 mL	25 mL	386043	02/02/17 10:39	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			386370	02/03/17 11:46	VS	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	386045	02/02/17 10:40	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386478	02/03/17 17:18	RC	TAL IRV
Dissolved	Filtration	FILTRATION			100 mL	100 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	384941	01/27/17 16:45	DB	TAL IRV
Dissolved	Analysis	245.1		1			385549	01/31/17 14:55	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			386100	02/06/17 01:36	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-385626/2
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/31/17 22:07	1
Surrogate	%Recovery	MB Qualifier	Limits			D	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	83		80 - 120					01/31/17 22:07	1

Lab Sample ID: LCS 440-385626/3
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	8.66		ug/L		87	70 - 125
Surrogate	%Recovery	LCS Qualifier	Limits			D	%Rec. Limits
Dibromofluoromethane (Surr)	85		80 - 120				

Lab Sample ID: 440-174317-Y-1 MS
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	9.08		ug/L		91	70 - 130
Surrogate	%Recovery	MS Qualifier	Limits			D	%Rec	%Rec. Limits	
Dibromofluoromethane (Surr)	87		80 - 120						

Lab Sample ID: 440-174317-Y-1 MSD
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	9.17		ug/L		92	70 - 130	1	30
Surrogate	%Recovery	MSD Qualifier	Limits			D	%Rec	%Rec. Limits	RPD	RPD Limit	
Dibromofluoromethane (Surr)	89		80 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-385063/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Anthracene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzidine	ND		10.0	5.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-385063/1-A

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 385063

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Chrysene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/29/17 11:31	01/31/17 12:24	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/29/17 11:31	01/31/17 12:24	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Fluoranthene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Fluorene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Isophorone	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Naphthalene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
Phenanthrene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
Phenol	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-385063/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/29/17 11:31	01/31/17 12:24	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/29/17 11:31	01/31/17 12:24	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/29/17 11:31	01/31/17 12:24	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	68		50 - 120	01/29/17 11:31	01/31/17 12:24	1
2-Fluorophenol	55		30 - 120	01/29/17 11:31	01/31/17 12:24	1
2,4,6-Tribromophenol	69		40 - 120	01/29/17 11:31	01/31/17 12:24	1
Nitrobenzene-d5	65		45 - 120	01/29/17 11:31	01/31/17 12:24	1
Terphenyl-d14	85		37 - 144	01/29/17 11:31	01/31/17 12:24	1
Phenol-d6	66		35 - 120	01/29/17 11:31	01/31/17 12:24	1

Lab Sample ID: LCS 440-385063/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	7.676		ug/L		77	47 - 145
Acenaphthylene	10.0	8.002		ug/L		80	33 - 145
Anthracene	10.0	8.045		ug/L		80	27 - 133
Benzidine	10.0	7.304	J,DX LQ	ug/L		73	5 - 66
Benzo[a]anthracene	10.0	8.481		ug/L		85	33 - 143
Benzo[b]fluoranthene	10.0	8.826		ug/L		88	24 - 150
Benzo[k]fluoranthene	10.0	8.681		ug/L		87	11 - 150
Benzo[a]pyrene	10.0	8.685		ug/L		87	17 - 150
Bis(2-chloroethoxy)methane	10.0	7.704		ug/L		77	33 - 150
Bis(2-chloroethyl)ether	10.0	7.646		ug/L		76	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	8.845		ug/L		88	10 - 150
4-Bromophenyl phenyl ether	10.0	8.150		ug/L		81	53 - 127
Butyl benzyl phthalate	10.0	8.758		ug/L		88	10 - 150
4-Chloro-3-methylphenol	10.0	8.082		ug/L		81	22 - 147
2-Chloronaphthalene	10.0	7.624		ug/L		76	60 - 118
2-Chlorophenol	10.0	7.432		ug/L		74	23 - 134
4-Chlorophenyl phenyl ether	10.0	7.723		ug/L		77	25 - 150
Chrysene	10.0	8.279		ug/L		83	17 - 150
Dibenz(a,h)anthracene	10.0	10.26		ug/L		103	10 - 150
Di-n-butyl phthalate	10.0	8.576		ug/L		86	10 - 118
1,2-Dichlorobenzene	10.0	6.763		ug/L		68	32 - 129
1,3-Dichlorobenzene	10.0	6.380		ug/L		64	10 - 150
1,4-Dichlorobenzene	10.0	6.449		ug/L		64	20 - 124
3,3'-Dichlorobenzidine	10.0	8.562		ug/L		86	10 - 150
2,4-Dichlorophenol	10.0	7.595		ug/L		76	39 - 135
Diethyl phthalate	10.0	8.483		ug/L		85	10 - 114
2,4-Dimethylphenol	10.0	7.083		ug/L		71	32 - 119
Dimethyl phthalate	10.0	8.297		ug/L		83	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.03		ug/L		80	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-385063/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dinitrophenol	20.0	17.61		ug/L		88	50 - 150
2,4-Dinitrotoluene	10.0	8.555		ug/L		86	39 - 139
2,6-Dinitrotoluene	10.0	8.223		ug/L		82	50 - 150
Di-n-octyl phthalate	10.0	8.918		ug/L		89	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	8.376		ug/L		83	47 - 116
Fluoranthene	10.0	8.453		ug/L		85	26 - 137
Fluorene	10.0	8.206		ug/L		82	59 - 121
Hexachlorobenzene	10.0	7.927		ug/L		79	10 - 150
Hexachlorobutadiene	10.0	5.652		ug/L		57	24 - 116
Hexachloroethane	10.0	6.430		ug/L		64	40 - 113
Hexachlorocyclopentadiene	10.0	3.307	J,DX	ug/L		33	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	9.545		ug/L		95	10 - 150
Isophorone	10.0	8.042		ug/L		80	21 - 150
Naphthalene	10.0	7.027		ug/L		70	21 - 133
Nitrobenzene	10.0	7.512		ug/L		75	35 - 150
2-Nitrophenol	10.0	7.661		ug/L		77	29 - 150
4-Nitrophenol	20.0	15.85		ug/L		79	10 - 132
N-Nitrosodimethylamine	10.0	8.001		ug/L		80	26 - 117
N-Nitrosodiphenylamine	10.0	7.826		ug/L		78	54 - 110
N-Nitrosodi-n-propylamine	10.0	7.824		ug/L		78	10 - 150
Pentachlorophenol	20.0	16.59		ug/L		83	14 - 150
Phenanthrene	10.0	8.014		ug/L		80	54 - 120
Phenol	10.0	7.508		ug/L		75	10 - 112
Pyrene	10.0	7.880		ug/L		79	52 - 115
1,2,4-Trichlorobenzene	10.0	6.836		ug/L		68	44 - 142
2,4,6-Trichlorophenol	10.0	7.951		ug/L		80	37 - 144
Benzo[g,h,i]perylene	10.0	9.763		ug/L		98	10 - 150
bis (2-chloroisopropyl) ether	10.0	7.644		ug/L		76	47 - 103

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	75		50 - 120
2-Fluorophenol	68		30 - 120
2,4,6-Tribromophenol	79		40 - 120
Nitrobenzene-d5	71		45 - 120
Terphenyl-d14	78		37 - 144
Phenol-d6	72		35 - 120

Lab Sample ID: LCSD 440-385063/3-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	10.0	7.432		ug/L		74	47 - 145	3	35
Acenaphthylene	10.0	5.921		ug/L		59	33 - 145	30	35
Anthracene	10.0	7.724		ug/L		77	27 - 133	4	35
Benzidine	10.0	7.093	J,DX LQ	ug/L		71	5 - 66	3	35
Benzo[a]anthracene	10.0	7.981		ug/L		80	33 - 143	6	35

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-385063/3-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD	Limit
Benzo[b]fluoranthene	10.0	8.655		ug/L		87	24 - 150	2	35	
Benzo[k]fluoranthene	10.0	8.368		ug/L		84	11 - 150	4	35	
Benzo[a]pyrene	10.0	4.875	BA	ug/L		49	17 - 150	56	35	
Bis(2-chloroethoxy)methane	10.0	2.999	LR BA	ug/L		30	33 - 150	88	35	
Bis(2-chloroethyl)ether	10.0	6.903		ug/L		69	12 - 150	10	35	
Bis(2-ethylhexyl) phthalate	10.0	8.455		ug/L		85	10 - 150	5	35	
4-Bromophenyl phenyl ether	10.0	7.832		ug/L		78	53 - 127	4	35	
Butyl benzyl phthalate	10.0	7.466		ug/L		75	10 - 150	16	35	
4-Chloro-3-methylphenol	10.0	8.046		ug/L		80	22 - 147	0	35	
2-Chloronaphthalene	10.0	7.265		ug/L		73	60 - 118	5	35	
2-Chlorophenol	10.0	6.815		ug/L		68	23 - 134	9	35	
4-Chlorophenyl phenyl ether	10.0	7.750		ug/L		78	25 - 150	0	35	
Chrysene	10.0	7.999		ug/L		80	17 - 150	3	35	
Dibenz(a,h)anthracene	10.0	9.270		ug/L		93	10 - 150	10	35	
Di-n-butyl phthalate	10.0	8.128		ug/L		81	10 - 118	5	35	
1,2-Dichlorobenzene	10.0	6.318		ug/L		63	32 - 129	7	35	
1,3-Dichlorobenzene	10.0	5.705		ug/L		57	10 - 150	11	35	
1,4-Dichlorobenzene	10.0	5.693		ug/L		57	20 - 124	12	35	
3,3'-Dichlorobenzidine	10.0	ND	LR BA	ug/L		4	10 - 150	183	35	
2,4-Dichlorophenol	10.0	7.386		ug/L		74	39 - 135	3	35	
Diethyl phthalate	10.0	8.496		ug/L		85	10 - 114	0	35	
2,4-Dimethylphenol	10.0	7.702		ug/L		77	32 - 119	8	35	
Dimethyl phthalate	10.0	8.460		ug/L		85	10 - 112	2	35	
4,6-Dinitro-2-methylphenol	20.0	16.12		ug/L		81	10 - 150	1	35	
2,4-Dinitrophenol	20.0	17.30		ug/L		86	50 - 150	2	35	
2,4-Dinitrotoluene	10.0	8.296		ug/L		83	39 - 139	3	35	
2,6-Dinitrotoluene	10.0	8.340		ug/L		83	50 - 150	1	35	
Di-n-octyl phthalate	10.0	8.464		ug/L		85	10 - 146	5	35	
1,2-Diphenylhydrazine(as Azobenzene)	10.1	4.845	BA	ug/L		48	47 - 116	53	35	
Fluoranthene	10.0	8.125		ug/L		81	26 - 137	4	35	
Fluorene	10.0	8.167		ug/L		82	59 - 121	0	35	
Hexachlorobenzene	10.0	7.505		ug/L		75	10 - 150	5	35	
Hexachlorobutadiene	10.0	4.848		ug/L		48	24 - 116	15	35	
Hexachloroethane	10.0	5.102		ug/L		51	40 - 113	23	35	
Hexachlorocyclopentadiene	10.0	2.648	J,DX	ug/L		26	10 - 67	22	35	
Indeno[1,2,3-cd]pyrene	10.0	9.197		ug/L		92	10 - 150	4	35	
Isophorone	10.0	7.956		ug/L		80	21 - 150	1	35	
Naphthalene	10.0	6.707		ug/L		67	21 - 133	5	35	
Nitrobenzene	10.0	7.829		ug/L		78	35 - 150	4	35	
2-Nitrophenol	10.0	7.386		ug/L		74	29 - 150	4	35	
4-Nitrophenol	20.0	15.65		ug/L		78	10 - 132	1	35	
N-Nitrosodimethylamine	10.0	6.850		ug/L		69	26 - 117	15	35	
N-Nitrosodiphenylamine	10.0	4.702	LR BA	ug/L		47	54 - 110	50	35	
N-Nitrosodi-n-propylamine	10.0	7.604		ug/L		76	10 - 150	3	35	
Pentachlorophenol	20.0	15.99		ug/L		80	14 - 150	4	35	
Phenanthrene	10.0	7.790		ug/L		78	54 - 120	3	35	
Phenol	10.0	6.041		ug/L		60	10 - 112	22	35	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-385063/3-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385063

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Pyrene	10.0	7.476		ug/L		75	52 - 115	5	35
1,2,4-Trichlorobenzene	10.0	6.187		ug/L		62	44 - 142	10	35
2,4,6-Trichlorophenol	10.0	7.347		ug/L		73	37 - 144	8	35
Benzo[g,h,i]perylene	10.0	8.561		ug/L		86	10 - 150	13	35
bis (2-chloroisopropyl) ether	10.0	6.914		ug/L		69	47 - 103	10	35

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	57		30 - 120
2,4,6-Tribromophenol	76		40 - 120
Nitrobenzene-d5	70		45 - 120
Terphenyl-d14	79		37 - 144
Phenol-d6	65		35 - 120

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-385116/1-A
Matrix: Water
Analysis Batch: 385441

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 13:21	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	61		29 - 115	01/30/17 07:40	01/31/17 13:21	1

Lab Sample ID: LCS 440-385116/4-A
Matrix: Water
Analysis Batch: 385441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	2.84		ug/L		71	50 - 115
Aroclor 1260	4.00	3.29		ug/L		82	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
DCB Decachlorobiphenyl (Surr)	68		29 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: LCSD 440-385116/5-A
Matrix: Water
Analysis Batch: 385441

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385116

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor 1016	4.00	3.14		ug/L		78	50 - 115	10	30
Aroclor 1260	4.00	3.45		ug/L		86	10 - 127	5	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	70		29 - 115

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-385116/1-A
Matrix: Water
Analysis Batch: 385463

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385116

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0050	0.0015	ug/L		01/30/17 07:40	01/31/17 10:50	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/30/17 07:40	01/31/17 10:50	1
beta-BHC	ND		0.010	0.0040	ug/L		01/30/17 07:40	01/31/17 10:50	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/30/17 07:40	01/31/17 10:50	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/30/17 07:40	01/31/17 10:50	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/30/17 07:40	01/31/17 10:50	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/30/17 07:40	01/31/17 10:50	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/30/17 07:40	01/31/17 10:50	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/30/17 07:40	01/31/17 10:50	1
Endrin	ND		0.0050	0.0020	ug/L		01/30/17 07:40	01/31/17 10:50	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/30/17 07:40	01/31/17 10:50	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/30/17 07:40	01/31/17 10:50	1
Heptachlor	ND		0.010	0.0030	ug/L		01/30/17 07:40	01/31/17 10:50	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/30/17 07:40	01/31/17 10:50	1
Toxaphene	ND		0.50	0.25	ug/L		01/30/17 07:40	01/31/17 10:50	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/30/17 07:40	01/31/17 10:50	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/30/17 07:40	01/31/17 10:50	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/30/17 07:40	01/31/17 10:50	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	61		10 - 150	01/30/17 07:40	01/31/17 10:50	1

Lab Sample ID: LCS 440-385116/2-A
Matrix: Water
Analysis Batch: 385463

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.250	0.140		ug/L		56	42 - 122
alpha-BHC	0.250	0.139		ug/L		56	37 - 134
beta-BHC	0.250	0.137		ug/L		55	17 - 147
delta-BHC	0.250	0.143		ug/L		57	19 - 140
Dieldrin	0.250	0.145		ug/L		58	36 - 146
Endosulfan I	0.250	0.139		ug/L		55	45 - 150
Endosulfan II	0.250	0.112		ug/L		45	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-385116/2-A
Matrix: Water
Analysis Batch: 385463

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385116

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
Endosulfan sulfate	0.250	0.145		ug/L		58	26 - 144	
Endrin	0.250	0.151		ug/L		61	30 - 147	
Endrin aldehyde	0.250	0.146		ug/L		58	47 - 115	
gamma-BHC (Lindane)	0.250	0.145		ug/L		58	32 - 127	
Heptachlor	0.250	0.149		ug/L		60	34 - 115	
Heptachlor epoxide	0.250	0.145		ug/L		58	37 - 142	
4,4'-DDD	0.250	0.153		ug/L		61	31 - 141	
4,4'-DDE	0.250	0.142		ug/L		57	30 - 145	
4,4'-DDT	0.250	0.180		ug/L		72	25 - 150	
LCS LCS								
Surrogate		%Recovery	Qualifier				Limits	
Tetrachloro-m-xylene		56					10 - 150	

Lab Sample ID: LCSD 440-385116/3-A
Matrix: Water
Analysis Batch: 385463

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 385116

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD Limit	
									RPD	Limit
Aldrin	0.250	0.150		ug/L		60	42 - 122	7	35	
alpha-BHC	0.250	0.149		ug/L		60	37 - 134	7	35	
beta-BHC	0.250	0.146		ug/L		59	17 - 147	7	35	
delta-BHC	0.250	0.153		ug/L		61	19 - 140	7	35	
Dieldrin	0.250	0.153		ug/L		61	36 - 146	5	35	
Endosulfan I	0.250	0.147		ug/L		59	45 - 150	6	35	
Endosulfan II	0.250	0.116		ug/L		46	10 - 150	3	35	
Endosulfan sulfate	0.250	0.150		ug/L		60	26 - 144	3	35	
Endrin	0.250	0.159		ug/L		64	30 - 147	5	35	
Endrin aldehyde	0.250	0.152		ug/L		61	47 - 115	4	35	
gamma-BHC (Lindane)	0.250	0.155		ug/L		62	32 - 127	7	35	
Heptachlor	0.250	0.159		ug/L		64	34 - 115	6	35	
Heptachlor epoxide	0.250	0.155		ug/L		62	37 - 142	6	35	
4,4'-DDD	0.250	0.160		ug/L		64	31 - 141	4	35	
4,4'-DDE	0.250	0.149		ug/L		60	30 - 145	5	35	
4,4'-DDT	0.250	0.184		ug/L		73	25 - 150	2	35	
LCSD LCSD										
Surrogate		%Recovery	Qualifier				Limits			
Tetrachloro-m-xylene		56					10 - 150			

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-384226/4
Matrix: Water
Analysis Batch: 384226

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Chromium, hexavalent	ND		1.0	0.25	ug/L			01/25/17 06:36	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: LCS 440-384226/3
Matrix: Water
Analysis Batch: 384226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	50.0	51.5		ug/L		103	90 - 110

Lab Sample ID: MRL 440-384226/5
Matrix: Water
Analysis Batch: 384226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	1.00	1.04		ug/L		104	50 - 150

Lab Sample ID: 440-174520-B-1 MS
Matrix: Water
Analysis Batch: 384226

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	26		50.0	76.1		ug/L		100	90 - 110

Lab Sample ID: 440-174520-B-1 MSD
Matrix: Water
Analysis Batch: 384226

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	26		50.0	77.1		ug/L		102	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-384051/4
Matrix: Water
Analysis Batch: 384051

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			01/24/17 13:35	1
Nitrite as N	ND		0.15	0.070	mg/L			01/24/17 13:35	1

Lab Sample ID: LCS 440-384051/2
Matrix: Water
Analysis Batch: 384051

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.06		mg/L		94	90 - 110
Nitrite as N	1.52	1.40		mg/L		92	90 - 110

Lab Sample ID: 440-174433-1 MS
Matrix: Water
Analysis Batch: 384051

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.3		1.13	2.50		mg/L		103	80 - 120
Nitrite as N	ND		1.52	1.51		mg/L		99	80 - 120

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-174433-1 MSD
Matrix: Water
Analysis Batch: 384051

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.3		1.13	2.46		mg/L		98	80 - 120	2	20
Nitrite as N	ND		1.52	1.41		mg/L		93	80 - 120	7	20

Lab Sample ID: MB 440-384052/4
Matrix: Water
Analysis Batch: 384052

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/24/17 13:35	1
Fluoride	ND		0.50	0.25	mg/L			01/24/17 13:35	1
Sulfate	ND		0.50	0.25	mg/L			01/24/17 13:35	1

Lab Sample ID: LCS 440-384052/2
Matrix: Water
Analysis Batch: 384052

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.60		mg/L		92	90 - 110
Fluoride	5.00	4.54		mg/L		91	90 - 110
Sulfate	5.00	4.83		mg/L		97	90 - 110

Lab Sample ID: 440-174433-1 MS
Matrix: Water
Analysis Batch: 384052

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.1		5.00	10.1		mg/L		99	80 - 120
Fluoride	ND		5.00	4.88		mg/L		98	80 - 120
Sulfate	12		5.00	17.4		mg/L		102	80 - 120

Lab Sample ID: 440-174433-1 MSD
Matrix: Water
Analysis Batch: 384052

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5.1		5.00	9.91		mg/L		96	80 - 120	1	20
Fluoride	ND		5.00	4.76		mg/L		95	80 - 120	2	20
Sulfate	12		5.00	17.4		mg/L		100	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-384264/3
Matrix: Water
Analysis Batch: 384264

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/25/17 09:27	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: LCS 440-384264/2
Matrix: Water
Analysis Batch: 384264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.1		ug/L		100	85 - 115

Lab Sample ID: LCSD 440-384264/6
Matrix: Water
Analysis Batch: 384264

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	25.0	25.7		ug/L		103	85 - 115	2	15

Lab Sample ID: MRL 440-384264/5
Matrix: Water
Analysis Batch: 384264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.88	J,DX	ug/L		97	75 - 125

Lab Sample ID: 440-174433-1 MS
Matrix: Water
Analysis Batch: 384264

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	28.8		ug/L		115	80 - 120

Lab Sample ID: 440-174433-1 MSD
Matrix: Water
Analysis Batch: 384264

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	29.2		ug/L		117	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-148436/1-A
Matrix: Water
Analysis Batch: 148646

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 148436

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,7,8-PeCDF	0.000000492	J,DX	0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,4,7,8-HxCDD	0.000000451	J,DX q	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,6,7,8-HxCDD	0.000000362	J,DX	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,7,8,9-HxCDD	0.000000387	J,DX	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-148436/1-A
Matrix: Water
Analysis Batch: 148646

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 148436

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.00000606	J,DX	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,6,7,8-HxCDF	0.00000461	J,DX	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,7,8,9-HxCDF	0.00000183	J,DX q	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
2,3,4,6,7,8-HxCDF	0.00000335	J,DX	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,4,6,7,8-HpCDD	0.00000127	J,DX q	0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,4,6,7,8-HpCDF	0.00000683	J,DX q	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
1,2,3,4,7,8,9-HpCDF	0.00000217	J,DX q	0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
OCDD	0.00000934	J,DX	0.00010	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
OCDF	0.00000147	J,DX q	0.00010	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total TCDD	0.00000211	J,DX q	0.000010	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total TCDF	0.00000329	J,DX q	0.000010	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total PeCDD	ND		0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total PeCDF	0.00000492	J,DX	0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total HxCDD	0.00000120	J,DX q	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total HxCDF	0.00000158	J,DX q	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total HpCDD	0.00000378	J,DX q	0.000050	0.0000002	ug/L		01/31/17 13:13	02/01/17 21:55	1
Total HpCDF	0.00000127	J,DX q	0.000050	0.0000001	ug/L		01/31/17 13:13	02/01/17 21:55	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	57		25 - 164	01/31/17 13:13	02/01/17 21:55	1
13C-2,3,7,8-TCDF	56		24 - 169	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,7,8-PeCDD	62		25 - 181	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	01/31/17 13:13	02/01/17 21:55	1
13C-2,3,4,7,8-PeCDF	66		21 - 178	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,4,7,8-HxCDD	51		32 - 141	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,4,7,8-HxCDF	57		26 - 152	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,6,7,8-HxCDF	62		26 - 123	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,7,8,9-HxCDF	53		29 - 147	01/31/17 13:13	02/01/17 21:55	1
13C-2,3,4,6,7,8-HxCDF	60		28 - 136	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,4,6,7,8-HpCDF	63		28 - 143	01/31/17 13:13	02/01/17 21:55	1
13C-1,2,3,4,7,8,9-HpCDF	59		26 - 138	01/31/17 13:13	02/01/17 21:55	1
13C-OCDD	60		17 - 157	01/31/17 13:13	02/01/17 21:55	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-148436/1-A
Matrix: Water
Analysis Batch: 148646

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 148436

Surrogate	MB MB %Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88	35 - 197	01/31/17 13:13	02/01/17 21:55	1

Lab Sample ID: LCS 320-148436/2-A
Matrix: Water
Analysis Batch: 148646

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 148436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000228		ug/L		114	67 - 158
2,3,7,8-TCDF	0.000200	0.000246	MB	ug/L		123	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00124		ug/L		124	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00123	MB	ug/L		123	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00120		ug/L		120	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00129	MB	ug/L		129	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00124	MB	ug/L		124	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00113	MB	ug/L		113	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00122	MB	ug/L		122	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00129	MB	ug/L		129	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00125	MB	ug/L		125	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00128	MB	ug/L		128	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00133	MB	ug/L		133	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00127	MB LQ	ug/L		127	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00121	MB	ug/L		121	78 - 138
OCDD	0.00200	0.00232	MB	ug/L		116	78 - 144
OCDF	0.00200	0.00245	MB	ug/L		122	63 - 170

Isotope Dilution	LCS LCS %Recovery Qualifier	Limits
13C-2,3,7,8-TCDD	65	20 - 175
13C-2,3,7,8-TCDF	63	22 - 152
13C-1,2,3,7,8-PeCDD	67	21 - 227
13C-1,2,3,7,8-PeCDF	64	21 - 192
13C-2,3,4,7,8-PeCDF	70	13 - 328
13C-1,2,3,4,7,8-HxCDD	61	21 - 193
13C-1,2,3,6,7,8-HxCDD	75	25 - 163
13C-1,2,3,4,7,8-HxCDF	64	19 - 202
13C-1,2,3,6,7,8-HxCDF	71	21 - 159
13C-1,2,3,7,8,9-HxCDF	59	17 - 205
13C-2,3,4,6,7,8-HxCDF	70	22 - 176
13C-1,2,3,4,6,7,8-HpCDD	59	26 - 166
13C-1,2,3,4,6,7,8-HpCDF	68	21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64	20 - 186
13C-OCDD	61	13 - 199

Surrogate	LCS LCS %Recovery Qualifier	Limits
37Cl4-2,3,7,8-TCDD	100	31 - 191

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-148436/3-A
Matrix: Water
Analysis Batch: 148646

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 148436

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000233		ug/L		116	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000253	MB	ug/L		126	75 - 158	2	50
1,2,3,7,8-PeCDD	0.00100	0.00125		ug/L		125	70 - 142	1	50
1,2,3,7,8-PeCDF	0.00100	0.00132	MB	ug/L		132	80 - 134	7	50
2,3,4,7,8-PeCDF	0.00100	0.00119		ug/L		119	68 - 160	0	50
1,2,3,4,7,8-HxCDD	0.00100	0.00119	MB	ug/L		119	70 - 164	9	50
1,2,3,6,7,8-HxCDD	0.00100	0.00127	MB	ug/L		127	76 - 134	2	50
1,2,3,7,8,9-HxCDD	0.00100	0.00113	MB	ug/L		113	64 - 162	0	50
1,2,3,4,7,8-HxCDF	0.00100	0.00121	MB	ug/L		121	72 - 134	1	50
1,2,3,6,7,8-HxCDF	0.00100	0.00130	MB	ug/L		130	84 - 130	1	50
1,2,3,7,8,9-HxCDF	0.00100	0.00129	MB	ug/L		129	78 - 130	4	50
2,3,4,6,7,8-HxCDF	0.00100	0.00129	MB	ug/L		129	70 - 156	1	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00123	MB	ug/L		123	70 - 140	8	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00121	MB	ug/L		121	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.00117	MB	ug/L		117	78 - 138	3	50
OCDD	0.00200	0.00213	MB	ug/L		107	78 - 144	8	50
OCDF	0.00200	0.00226	MB	ug/L		113	63 - 170	8	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	57		20 - 175
13C-2,3,7,8-TCDF	56		22 - 152
13C-1,2,3,7,8-PeCDD	57		21 - 227
13C-1,2,3,7,8-PeCDF	52		21 - 192
13C-2,3,4,7,8-PeCDF	62		13 - 328
13C-1,2,3,4,7,8-HxCDD	51		21 - 193
13C-1,2,3,6,7,8-HxCDD	59		25 - 163
13C-1,2,3,4,7,8-HxCDF	51		19 - 202
13C-1,2,3,6,7,8-HxCDF	56		21 - 159
13C-1,2,3,7,8,9-HxCDF	48		17 - 205
13C-2,3,4,6,7,8-HxCDF	56		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	50		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	55		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	52		20 - 186
13C-OCDD	51		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	99		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-148436/1-A
Matrix: Water
Analysis Batch: 148816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 148436

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000005	ug/L		01/31/17 13:13	02/02/17 16:11	1

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TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.

TestAmerica Job ID: 440-174433-1

Project/Site: Boeing SSFL NPDES Outfall 011 Comp

		MB MB		
Isotope Dilution	%Recovery	Qualifier	Limits	
13C-2,3,7,8-TCDF - RA	54		24 - 169	

Prepared	Analyzed	Dil Fac
01/31/17 13:13	02/02/17 16:11	1

		MB MB		
Surrogate	%Recovery	Qualifier	Limits	
37Cl4-2,3,7,8-TCDD - RA	84		35 - 197	

Prepared	Analyzed	Dil Fac
01/31/17 13:13	02/02/17 16:11	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-385834/1-A
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Boron	ND		0.050	0.025	mg/L		02/01/17 16:14	02/02/17 17:03	1
Barium	ND		0.010	0.0050	mg/L		02/01/17 16:14	02/02/17 17:03	1
Beryllium	ND		2.0	1.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Cobalt	ND		10	2.5	ug/L		02/01/17 16:14	02/02/17 17:03	1
Chromium	ND		5.0	2.5	ug/L		02/01/17 16:14	02/02/17 17:03	1
Iron	ND		0.10	0.050	mg/L		02/01/17 16:14	02/02/17 17:03	1
Manganese	ND		20	10	ug/L		02/01/17 16:14	02/02/17 17:03	1
Nickel	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Vanadium	ND		10	5.0	ug/L		02/01/17 16:14	02/02/17 17:03	1
Zinc	ND		20	10	ug/L		02/01/17 16:14	02/02/17 17:03	1

Lab Sample ID: LCS 440-385834/2-A
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	512		ug/L		102	85 - 115
Boron	0.500	0.493		mg/L		99	85 - 115
Barium	0.500	0.509		mg/L		102	85 - 115
Beryllium	500	501		ug/L		100	85 - 115
Calcium	2.50	2.68		mg/L		107	85 - 115
Cobalt	500	522		ug/L		104	85 - 115
Chromium	500	530		ug/L		106	85 - 115
Iron	0.500	0.524		mg/L		105	85 - 115
Magnesium	2.50	2.58		mg/L		103	85 - 115
Manganese	500	533		ug/L		107	85 - 115
Nickel	500	542		ug/L		108	85 - 115
Vanadium	500	501		ug/L		100	85 - 115
Zinc	500	498		ug/L		100	85 - 115
Silver	250	233		ug/L		93	85 - 115

Lab Sample ID: 440-174433-1 MS
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	ND		500	505		ug/L		101	70 - 130
Boron	0.14		0.500	0.626		mg/L		98	70 - 130
Barium	0.018		0.500	0.531		mg/L		103	70 - 130
Beryllium	ND		500	511		ug/L		102	70 - 130
Calcium	9.7		2.50	12.2		mg/L		99	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174433-1 MS
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Cobalt	ND		500	519		ug/L		104		70 - 130
Chromium	ND		500	522		ug/L		104		70 - 130
Iron	0.77		0.500	1.79	LM	mg/L		205		70 - 130
Magnesium	2.8		2.50	5.47		mg/L		107		70 - 130
Manganese	33		500	571		ug/L		108		70 - 130
Nickel	ND		500	513		ug/L		103		70 - 130
Vanadium	ND		500	508		ug/L		102		70 - 130
Zinc	11	J,DX	500	510		ug/L		100		70 - 130
Silver	ND		250	233		ug/L		93		70 - 130

Lab Sample ID: 440-174433-1 MSD
Matrix: Water
Analysis Batch: 386191

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total Recoverable
Prep Batch: 385834

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Arsenic	ND		500	505		ug/L		101		70 - 130	0	20
Boron	0.14		0.500	0.625		mg/L		98		70 - 130	0	20
Barium	0.018		0.500	0.531		mg/L		103		70 - 130	0	20
Beryllium	ND		500	507		ug/L		101		70 - 130	1	20
Calcium	9.7		2.50	12.1		mg/L		95		70 - 130	1	20
Cobalt	ND		500	519		ug/L		104		70 - 130	0	20
Chromium	ND		500	529		ug/L		106		70 - 130	1	20
Iron	0.77		0.500	2.36	LM BA	mg/L		319		70 - 130	27	20
Magnesium	2.8		2.50	5.51		mg/L		108		70 - 130	1	20
Manganese	33		500	573		ug/L		108		70 - 130	0	20
Nickel	ND		500	535		ug/L		107		70 - 130	4	20
Vanadium	ND		500	512		ug/L		102		70 - 130	1	20
Zinc	11	J,DX	500	513		ug/L		100		70 - 130	1	20
Silver	ND		250	234		ug/L		94		70 - 130	1	20

Lab Sample ID: MB 440-384878/1-E
Matrix: Water
Analysis Batch: 386370

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 386043

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		02/02/17 10:39	02/03/17 11:35	1
Boron	ND		0.050	0.025	mg/L		02/02/17 10:39	02/03/17 11:35	1
Barium	ND		0.010	0.0050	mg/L		02/02/17 10:39	02/03/17 11:35	1
Beryllium	ND		2.0	1.0	ug/L		02/02/17 10:39	02/03/17 11:35	1
Cobalt	ND		10	2.5	ug/L		02/02/17 10:39	02/03/17 11:35	1
Chromium	ND		5.0	2.5	ug/L		02/02/17 10:39	02/03/17 11:35	1
Iron	ND		0.10	0.050	mg/L		02/02/17 10:39	02/03/17 11:35	1
Manganese	ND		20	10	ug/L		02/02/17 10:39	02/03/17 11:35	1
Nickel	ND		10	5.0	ug/L		02/02/17 10:39	02/03/17 11:35	1
Vanadium	ND		10	5.0	ug/L		02/02/17 10:39	02/03/17 11:35	1
Zinc	11.5	J,DX	20	10	ug/L		02/02/17 10:39	02/03/17 11:35	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-384878/2-E
Matrix: Water
Analysis Batch: 386370

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 386043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	500	488		ug/L		98	85 - 115
Boron	0.500	0.466		mg/L		93	85 - 115
Barium	0.500	0.499		mg/L		100	85 - 115
Beryllium	500	489		ug/L		98	85 - 115
Calcium	2.50	2.52		mg/L		101	85 - 115
Cobalt	500	510		ug/L		102	85 - 115
Chromium	500	513		ug/L		103	85 - 115
Iron	0.500	0.538		mg/L		108	85 - 115
Magnesium	2.50	2.50		mg/L		100	85 - 115
Manganese	500	517		ug/L		103	85 - 115
Nickel	500	521		ug/L		104	85 - 115
Vanadium	500	491		ug/L		98	85 - 115
Zinc	500	497		ug/L		99	85 - 115
Silver	250	229		ug/L		91	85 - 115

Lab Sample ID: LCSD 440-384878/24-B
Matrix: Water
Analysis Batch: 386370

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 386043

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	500	500		ug/L		100	85 - 115	2	20
Boron	0.500	0.470		mg/L		94	85 - 115	1	20
Barium	0.500	0.505		mg/L		101	85 - 115	1	20
Beryllium	500	497		ug/L		99	85 - 115	2	20
Calcium	2.50	2.54		mg/L		102	85 - 115	1	20
Cobalt	500	513		ug/L		103	85 - 115	1	20
Chromium	500	519		ug/L		104	85 - 115	1	20
Iron	0.500	0.525		mg/L		105	85 - 115	3	20
Magnesium	2.50	2.53		mg/L		101	85 - 115	1	20
Manganese	500	522		ug/L		104	85 - 115	1	20
Nickel	500	528		ug/L		106	85 - 115	1	20
Vanadium	500	496		ug/L		99	85 - 115	1	20
Zinc	500	501		ug/L		100	85 - 115	1	20
Silver	250	230		ug/L		92	85 - 115	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-385835/1-A
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/01/17 16:19	02/03/17 11:13	1
Copper	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13	1
Lead	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13	1
Antimony	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13	1
Selenium	ND		2.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13	1
Thallium	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-385835/1-A
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		1.0	0.50	ug/L		02/01/17 16:19	02/03/17 11:13	1

Lab Sample ID: LCS 440-385835/2-A
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	74.3		ug/L		93	85 - 115
Copper	80.0	72.6		ug/L		91	85 - 115
Lead	80.0	72.9		ug/L		91	85 - 115
Antimony	80.0	82.4		ug/L		103	85 - 115
Selenium	80.0	76.1		ug/L		95	85 - 115
Thallium	80.0	74.7		ug/L		93	85 - 115
Silver	80.0	74.3		ug/L		93	85 - 115

Lab Sample ID: 440-174433-1 MS
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND		80.0	76.6		ug/L		96	70 - 130
Copper	2.8		80.0	77.4		ug/L		93	70 - 130
Lead	1.1		80.0	74.4		ug/L		92	70 - 130
Antimony	ND		80.0	84.3		ug/L		105	70 - 130
Selenium	ND		80.0	75.1		ug/L		94	70 - 130
Thallium	ND		80.0	77.9		ug/L		97	70 - 130
Silver	ND		80.0	77.1		ug/L		96	70 - 130

Lab Sample ID: 440-174433-1 MSD
Matrix: Water
Analysis Batch: 386381

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total Recoverable
Prep Batch: 385835

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND		80.0	75.5		ug/L		94	70 - 130	1	20
Copper	2.8		80.0	76.9		ug/L		93	70 - 130	1	20
Lead	1.1		80.0	74.5		ug/L		92	70 - 130	0	20
Antimony	ND		80.0	83.5		ug/L		104	70 - 130	1	20
Selenium	ND		80.0	74.4		ug/L		93	70 - 130	1	20
Thallium	ND		80.0	75.9		ug/L		95	70 - 130	3	20
Silver	ND		80.0	76.8		ug/L		96	70 - 130	0	20

Lab Sample ID: MB 440-386045/1-A
Matrix: Water
Analysis Batch: 386478

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 386045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/02/17 10:40	02/03/17 17:10	1
Copper	ND		2.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:10	1
Lead	ND		1.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:10	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-386045/1-A
Matrix: Water
Analysis Batch: 386478

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 386045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:10	1
Selenium	ND		2.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:10	1
Thallium	ND		1.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:10	1
Silver	ND		1.0	0.50	ug/L		02/02/17 10:40	02/03/17 17:10	1

Lab Sample ID: LCS 440-386045/2-A
Matrix: Water
Analysis Batch: 386478

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 386045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	71.5		ug/L		89	85 - 115
Copper	80.0	71.3		ug/L		89	85 - 115
Lead	80.0	71.5		ug/L		89	85 - 115
Antimony	80.0	81.6		ug/L		102	85 - 115
Selenium	80.0	73.4		ug/L		92	85 - 115
Thallium	80.0	74.5		ug/L		93	85 - 115
Silver	80.0	70.9		ug/L		89	85 - 115

Lab Sample ID: LCSD 440-386045/3-A
Matrix: Water
Analysis Batch: 386478

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 386045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	80.0	71.3		ug/L		89	85 - 115	0	20
Copper	80.0	70.8		ug/L		89	85 - 115	1	20
Lead	80.0	73.1		ug/L		91	85 - 115	2	20
Antimony	80.0	81.7		ug/L		102	85 - 115	0	20
Selenium	80.0	75.1		ug/L		94	85 - 115	2	20
Thallium	80.0	74.5		ug/L		93	85 - 115	0	20
Silver	80.0	70.5		ug/L		88	85 - 115	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384334/1-A
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384334

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/25/17 12:31	01/26/17 13:00	1

Lab Sample ID: LCS 440-384334/2-A
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384334

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.11		ug/L		101	85 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-174175-G-7-B MS
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384334

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.67		ug/L		108	70 - 130

Lab Sample ID: 440-174175-G-7-C MSD
Matrix: Water
Analysis Batch: 384694

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384334

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.23		ug/L		103	70 - 130	5	20

Lab Sample ID: MB 440-384878/1-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 384941

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:14	1

Lab Sample ID: LCS 440-384878/2-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.63		ug/L		95	85 - 115

Lab Sample ID: 440-174317-A-2-E MS
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.36		ug/L		92	70 - 130

Lab Sample ID: 440-174317-A-2-F MSD
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	7.42		ug/L		93	70 - 130	1	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-384268/5
Matrix: Water
Analysis Batch: 384268

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			01/25/17 08:55	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 180.1 - Turbidity, Nephelometric (Continued)

Lab Sample ID: MRL 440-384268/4
Matrix: Water
Analysis Batch: 384268

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Turbidity	0.100	0.100		NTU		100	50 - 150

Lab Sample ID: 440-174433-1 DU
Matrix: Water
Analysis Batch: 384268

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	34		34.0		NTU		0.4	20

Method: DV-WC-0077 - Hydrazine, Ion Chromatography

Lab Sample ID: MB 280-360316/1-A
Matrix: Water
Analysis Batch: 361637

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360316

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monomethyl Hydrazine	ND		10	0.25	ug/L		01/27/17 16:42	02/09/17 22:41	1

Lab Sample ID: LCS 280-360316/2-A
Matrix: Water
Analysis Batch: 361637

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360316

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Monomethyl Hydrazine	49.6	46.1		ug/L		93	82 - 122

Lab Sample ID: 280-93390-J-5-B MS
Matrix: Water
Analysis Batch: 361637

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 360316

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Monomethyl Hydrazine	ND		49.6	59.5		ug/L		120	81 - 121

Lab Sample ID: 280-93390-J-5-C MSD
Matrix: Water
Analysis Batch: 361637

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 360316

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Monomethyl Hydrazine	ND		49.6	56.4		ug/L		114	81 - 121	5	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384875/1
Matrix: Water
Analysis Batch: 384875

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/27/17 11:44	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-384875/2
 Matrix: Water
 Analysis Batch: 384875

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	962		mg/L		96	90 - 110

Lab Sample ID: 440-174415-F-4 DU
 Matrix: Water
 Analysis Batch: 384875

Client Sample ID: Duplicate
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	200		204		mg/L		1	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-385245/1
 Matrix: Water
 Analysis Batch: 385245

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/30/17 14:17	1

Lab Sample ID: LCS 440-385245/2
 Matrix: Water
 Analysis Batch: 385245

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1010		mg/L		101	85 - 115

Lab Sample ID: 440-174640-A-2 DU
 Matrix: Water
 Analysis Batch: 385245

Client Sample ID: Duplicate
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	280		267		mg/L		4	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-384650/1-A
 Matrix: Water
 Analysis Batch: 384744

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 384650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1

Lab Sample ID: LCS 440-384650/2-A
 Matrix: Water
 Analysis Batch: 384744

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 384650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	101		ug/L		101	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCSD 440-384650/3-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	100	101		ug/L		101	90 - 110	1	10

Lab Sample ID: 440-174317-P-1-D MS
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	101		ug/L		101	70 - 115

Lab Sample ID: 440-174317-P-1-E MSD
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-384965/12
Matrix: Water
Analysis Batch: 384965

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			01/27/17 16:07	1

Lab Sample ID: LCS 440-384965/13
Matrix: Water
Analysis Batch: 384965

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	5.150		mg/L		103	90 - 110

Lab Sample ID: MRL 440-384965/11
Matrix: Water
Analysis Batch: 384965

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	0.200	0.2190		mg/L		110	10 - 200

Lab Sample ID: 440-174234-AQ-1 MS
Matrix: Water
Analysis Batch: 384965

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	ND		5.00	5.310		mg/L		106	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-174234-AQ-1 MSD

Matrix: Water

Analysis Batch: 384965

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.350		mg/L		107	90 - 110	1	15

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-384772/6

Matrix: Water

Analysis Batch: 384772

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.65	mg/L			01/25/17 07:03	1

Lab Sample ID: LCS 440-384772/5

Matrix: Water

Analysis Batch: 384772

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	10.0		mg/L		100	90 - 110

Lab Sample ID: 440-174483-A-1 MS

Matrix: Water

Analysis Batch: 384772

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.8		5.00	6.23		mg/L		88	80 - 120

Lab Sample ID: 440-174483-A-1 MSD

Matrix: Water

Analysis Batch: 384772

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	1.8		5.00	6.15		mg/L		87	80 - 120	1	20

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-384214/3

Matrix: Water

Analysis Batch: 384214

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			01/24/17 22:32	1

Lab Sample ID: LCS 440-384214/4

Matrix: Water

Analysis Batch: 384214

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.235		mg/L		94	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 440-174433-1 MS

Matrix: Water

Analysis Batch: 384214

Client Sample ID: Outfall011_20170124_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.11		0.250	0.355		mg/L		97	50 - 125

Lab Sample ID: 440-174433-1 MSD

Matrix: Water

Analysis Batch: 384214

Client Sample ID: Outfall011_20170124_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.11		0.250	0.362		mg/L		100	50 - 125	2	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-384132/1

Matrix: Water

Analysis Batch: 384132

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			01/24/17 15:15	1

Lab Sample ID: LCS 440-384132/4

Matrix: Water

Analysis Batch: 384132

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	193		mg/L		97	85 - 115

Lab Sample ID: LCSD 440-384132/5

Matrix: Water

Analysis Batch: 384132

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	195		mg/L		98	85 - 115	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

GC/MS VOA

Analysis Batch: 385626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	8260B SIM	
MB 440-385626/2	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-385626/3	Lab Control Sample	Total/NA	Water	8260B SIM	
440-174317-Y-1 MS	Matrix Spike	Total/NA	Water	8260B SIM	
440-174317-Y-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

GC/MS Semi VOA

Prep Batch: 385063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	625	
MB 440-385063/1-A	Method Blank	Total/NA	Water	625	
LCS 440-385063/2-A	Lab Control Sample	Total/NA	Water	625	
LCSD 440-385063/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 385461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	625	385063
MB 440-385063/1-A	Method Blank	Total/NA	Water	625	385063
LCS 440-385063/2-A	Lab Control Sample	Total/NA	Water	625	385063
LCSD 440-385063/3-A	Lab Control Sample Dup	Total/NA	Water	625	385063

GC Semi VOA

Prep Batch: 385116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	608	
MB 440-385116/1-A	Method Blank	Total/NA	Water	608	
LCS 440-385116/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-385116/4-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-385116/3-A	Lab Control Sample Dup	Total/NA	Water	608	
LCSD 440-385116/5-A	Lab Control Sample Dup	Total/NA	Water	608	

Analysis Batch: 385441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	608 PCB LL	385116
MB 440-385116/1-A	Method Blank	Total/NA	Water	608 PCB LL	385116
LCS 440-385116/4-A	Lab Control Sample	Total/NA	Water	608 PCB LL	385116
LCSD 440-385116/5-A	Lab Control Sample Dup	Total/NA	Water	608 PCB LL	385116

Analysis Batch: 385463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	608 Pesticides	385116
MB 440-385116/1-A	Method Blank	Total/NA	Water	608 Pesticides	385116
LCS 440-385116/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	385116
LCSD 440-385116/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	385116

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

HPLC/IC

Analysis Batch: 384051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	300.0	
MB 440-384051/4	Method Blank	Total/NA	Water	300.0	
LCS 440-384051/2	Lab Control Sample	Total/NA	Water	300.0	
440-174433-1 MS	Outfall011_20170124_Comp	Total/NA	Water	300.0	
440-174433-1 MSD	Outfall011_20170124_Comp	Total/NA	Water	300.0	

Analysis Batch: 384052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	300.0	
MB 440-384052/4	Method Blank	Total/NA	Water	300.0	
LCS 440-384052/2	Lab Control Sample	Total/NA	Water	300.0	
440-174433-1 MS	Outfall011_20170124_Comp	Total/NA	Water	300.0	
440-174433-1 MSD	Outfall011_20170124_Comp	Total/NA	Water	300.0	

Analysis Batch: 384226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	218.6	
MB 440-384226/4	Method Blank	Total/NA	Water	218.6	
LCS 440-384226/3	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-384226/5	Lab Control Sample	Total/NA	Water	218.6	
440-174520-B-1 MS	Matrix Spike	Total/NA	Water	218.6	
440-174520-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	218.6	

Analysis Batch: 384264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	314.0	
MB 440-384264/3	Method Blank	Total/NA	Water	314.0	
LCS 440-384264/2	Lab Control Sample	Total/NA	Water	314.0	
LCSD 440-384264/6	Lab Control Sample Dup	Total/NA	Water	314.0	
MRL 440-384264/5	Lab Control Sample	Total/NA	Water	314.0	
440-174433-1 MS	Outfall011_20170124_Comp	Total/NA	Water	314.0	
440-174433-1 MSD	Outfall011_20170124_Comp	Total/NA	Water	314.0	

Analysis Batch: 385558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 148436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	1613B	
440-174433-1 - RA	Outfall011_20170124_Comp	Total/NA	Water	1613B	
MB 320-148436/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-148436/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-148436/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-148436/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Specialty Organics (Continued)

Analysis Batch: 148646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	1613B	148436
MB 320-148436/1-A	Method Blank	Total/NA	Water	1613B	148436
LCS 320-148436/2-A	Lab Control Sample	Total/NA	Water	1613B	148436
LCSD 320-148436/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	148436

Analysis Batch: 148816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1 - RA	Outfall011_20170124_Comp	Total/NA	Water	1613B	148436
MB 320-148436/1-A - RA	Method Blank	Total/NA	Water	1613B	148436

Metals

Prep Batch: 384334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	245.1	
MB 440-384334/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384334/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174175-G-7-B MS	Matrix Spike	Total/NA	Water	245.1	
440-174175-G-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 384694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	245.1	384334
MB 440-384334/1-A	Method Blank	Total/NA	Water	245.1	384334
LCS 440-384334/2-A	Lab Control Sample	Total/NA	Water	245.1	384334
440-174175-G-7-B MS	Matrix Spike	Total/NA	Water	245.1	384334
440-174175-G-7-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	384334

Filtration Batch: 384878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	FILTRATION	
MB 440-384878/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-384878/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-384878/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-384878/24-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 384941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	245.1	384878
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384878
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384878
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	384878
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	384878

Analysis Batch: 385549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	245.1	384941

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Metals (Continued)

Analysis Batch: 385549 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384941
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384941
440-174317-A-2-E MS	Matrix Spike	Dissolved	Water	245.1	384941
440-174317-A-2-F MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	384941

Prep Batch: 385834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total Recoverable	Water	200.2	
MB 440-385834/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385834/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174433-1 MS	Outfall011_20170124_Comp	Total Recoverable	Water	200.2	
440-174433-1 MSD	Outfall011_20170124_Comp	Total Recoverable	Water	200.2	

Prep Batch: 385835

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total Recoverable	Water	200.2	
MB 440-385835/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385835/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174433-1 MS	Outfall011_20170124_Comp	Total Recoverable	Water	200.2	
440-174433-1 MSD	Outfall011_20170124_Comp	Total Recoverable	Water	200.2	

Prep Batch: 386043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	200.2	384878
MB 440-384878/1-E	Method Blank	Dissolved	Water	200.2	384878
LCS 440-384878/2-E	Lab Control Sample	Dissolved	Water	200.2	384878
LCSD 440-384878/24-B	Lab Control Sample Dup	Dissolved	Water	200.2	384878

Prep Batch: 386045

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	200.2	384878
MB 440-386045/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-386045/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
LCSD 440-386045/3-A	Lab Control Sample Dup	Total Recoverable	Water	200.2	

Analysis Batch: 386100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total Recoverable	Water	SM 2340B	
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 386191

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total Recoverable	Water	200.7 Rev 4.4	385834
MB 440-385834/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	385834
LCS 440-385834/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	385834
440-174433-1 MS	Outfall011_20170124_Comp	Total Recoverable	Water	200.7 Rev 4.4	385834
440-174433-1 MSD	Outfall011_20170124_Comp	Total Recoverable	Water	200.7 Rev 4.4	385834

Analysis Batch: 386370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	200.7 Rev 4.4	386043

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Metals (Continued)

Analysis Batch: 386370 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-384878/1-E	Method Blank	Dissolved	Water	200.7 Rev 4.4	386043
LCS 440-384878/2-E	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	386043
LCSD 440-384878/24-B	Lab Control Sample Dup	Dissolved	Water	200.7 Rev 4.4	386043

Analysis Batch: 386381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total Recoverable	Water	200.8	385835
MB 440-385835/1-A	Method Blank	Total Recoverable	Water	200.8	385835
LCS 440-385835/2-A	Lab Control Sample	Total Recoverable	Water	200.8	385835
440-174433-1 MS	Outfall011_20170124_Comp	Total Recoverable	Water	200.8	385835
440-174433-1 MSD	Outfall011_20170124_Comp	Total Recoverable	Water	200.8	385835

Analysis Batch: 386478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-2	Outfall011_20170124_Comp_F	Dissolved	Water	200.8	386045
MB 440-386045/1-A	Method Blank	Total Recoverable	Water	200.8	386045
LCS 440-386045/2-A	Lab Control Sample	Total Recoverable	Water	200.8	386045
LCSD 440-386045/3-A	Lab Control Sample Dup	Total Recoverable	Water	200.8	386045

General Chemistry

Prep Batch: 360316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	Filtration	
MB 280-360316/1-A	Method Blank	Total/NA	Water	Filtration	
LCS 280-360316/2-A	Lab Control Sample	Total/NA	Water	Filtration	
280-93390-J-5-B MS	Matrix Spike	Total/NA	Water	Filtration	
280-93390-J-5-C MSD	Matrix Spike Duplicate	Total/NA	Water	Filtration	

Analysis Batch: 361637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	DV-WC-0077	360316
MB 280-360316/1-A	Method Blank	Total/NA	Water	DV-WC-0077	360316
LCS 280-360316/2-A	Lab Control Sample	Total/NA	Water	DV-WC-0077	360316
280-93390-J-5-B MS	Matrix Spike	Total/NA	Water	DV-WC-0077	360316
280-93390-J-5-C MSD	Matrix Spike Duplicate	Total/NA	Water	DV-WC-0077	360316

Analysis Batch: 384132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM5210B	
USB 440-384132/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-384132/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-384132/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 384214

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 5540C	
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 5540C	
MB 440-384214/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-384214/4	Lab Control Sample	Total/NA	Water	SM 5540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

General Chemistry (Continued)

Analysis Batch: 384214 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1 MS	Outfall011_20170124_Comp	Total/NA	Water	SM 5540C	
440-174433-1 MSD	Outfall011_20170124_Comp	Total/NA	Water	SM 5540C	

Analysis Batch: 384268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	180.1	
MB 440-384268/5	Method Blank	Total/NA	Water	180.1	
MRL 440-384268/4	Lab Control Sample	Total/NA	Water	180.1	
440-174433-1 DU	Outfall011_20170124_Comp	Total/NA	Water	180.1	

Prep Batch: 384650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	Distill/CN	
MB 440-384650/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174317-P-1-D MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-174317-P-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 384744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 4500 CN E	384650
MB 440-384650/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	384650
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	384650
LCSD 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	384650
440-174317-P-1-D MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	384650
440-174317-P-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	384650

Analysis Batch: 384772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 5310B	
MB 440-384772/6	Method Blank	Total/NA	Water	SM 5310B	
LCS 440-384772/5	Lab Control Sample	Total/NA	Water	SM 5310B	
440-174483-A-1 MS	Matrix Spike	Total/NA	Water	SM 5310B	
440-174483-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310B	

Analysis Batch: 384875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 2540C	
MB 440-384875/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384875/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174415-F-4 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 384965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-384965/12	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-384965/13	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-384965/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-174234-AQ-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-174234-AQ-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Analysis Batch: 385245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	SM 2540D	
MB 440-385245/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-385245/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174640-A-2 DU	Duplicate	Total/NA	Water	SM 2540D	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
BA	Relative percent difference out of control
LR	LCS/LCSD recovery below method control limits
LQ	LCS/LCSD recovery above method control limits
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

HPLC/IC

Qualifier	Qualifier Description
BU	Analyzed out of holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
LQ	LCS/LCSD recovery above method control limits
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
BA	Relative percent difference out of control
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Glossary (Continued)

Abbreviation **These commonly used abbreviations may or may not be present in this report.**

TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-17
California	State Program	9	2513	08-31-16 *
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-17
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16 *
Kansas	NELAP	7	E-10166	04-30-17
Louisiana	NELAP	6	02096	06-30-17
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-17 *
Nevada	State Program	9	CO0026	07-31-17
New Hampshire	NELAP	1	205310	04-28-17
New Jersey	NELAP	2	CO004	06-30-17
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-17 *
Oklahoma	State Program	6	8614	08-31-17
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-17
South Carolina	State Program	4	72002001	01-09-17 *
Texas	NELAP	6	T104704183-16-12	09-30-17
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-17
Virginia	NELAP	3	460232	06-14-17
Washington	State Program	10	C583	08-02-17
West Virginia DEP	State Program	3	354	11-30-17

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Laboratory: TestAmerica Denver (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999615430	08-31-17
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall011_20170122_Comp (440-174433-1)
DATE RECEIVED: 25 Jan - 17
ABC LAB NO.: TAM0117.205

CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = -8.25 %

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 08 Feb-17 16:54 (p 1 of 1)
 Test Code: TAM0117.205sel | 00-3763-1547

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID: 13-4896-8565	Test Type: Cell Growth	Analyst:	Start Date: 25 Jan-17 12:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 29 Jan-17	Species: Selenastrum capricornutum	Brine: Not Applicable	Duration: 83h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 07-7844-7214	Code: TAM0117.205s	Client: Test America Irvine	Sample Date: 23 Jan-17 22:58	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 25 Jan-17 11:42	Source: Bioassay Report		Sample Age: 38h (1.3 °C)	Station: Outfall011_20170122_Comp (440-174433-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
12-4773-3715	Cell Density	TST-Welch's t Test	1.5E-05	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-4773-3715	Cell Density	Control CV	0.01923	<<	0.2	Yes	Passes Criteria
12-4773-3715	Cell Density	Control Resp	1.32E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.320E+6	1.299E+6	1.341E+6	1.291E+6	1.372E+6	8.972E+3	2.538E+4	1.92%	0.00%
100		8	1.429E+6	1.321E+6	1.537E+6	1.276E+6	1.635E+6	4.571E+4	1.293E+6	9.05%	-8.25%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.307E+6	1.332E+6	1.305E+6	1.319E+6	1.302E+6	1.330E+6	1.372E+6	1.291E+6
100		1.285E+6	1.276E+6	1.635E+6	1.511E+6	1.501E+6	1.325E+6	1.389E+6	1.507E+6

CETIS Analytical Report

Report Date: 08 Feb-17 16:54 (p 1 of 2)
 Test Code: TAM0117.205sel | 00-3763-1547

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-4773-3715	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 08 Feb-17 16:53	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes			
Batch ID: 13-4896-8565	Test Type: Cell Growth	Analyst:			
Start Date: 25 Jan-17 12:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 29 Jan-17	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 83h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 07-7844-7214	Code: TAM0117.205s	Client: Test America Irvine			
Sample Date: 23 Jan-17 22:56	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls			
Receipt Date: 25 Jan-17 11:42	Source: Bioassay Report				
Sample Age: 38h (1.3 °C)	Station: Outfall011_20170122_Comp (440-174433-				

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	9.498	0.7111	7	CDF	1.5E-05	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.01923	<<	0.2	Yes	Passes Criteria
Control Resp	1.32E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.742E+10	4.742E+10	1	5.464	0.0348	Significant Effect
Error	1.215E+11	8.678E+09	14			
Total	1.689E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	21.05	8.862	4.2E-04	Unequal Variances
Variances	Mod Levene Equality of Variance Test	18.94	8.862	6.6E-04	Unequal Variances
Variances	Variance Ratio F Test	25.95	8.885	3.4E-04	Unequal Variances
Distribution	Anderson-Darling A2 Normality Test	0.4276	3.878	0.3167	Normal Distribution
Distribution	D'Agostino Skewness Test	0.513	2.576	0.6079	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1424	0.2471	0.5519	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.951	0.8408	0.5054	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.320E+6	1.299E+6	1.341E+6	1.313E+6	1.291E+6	1.372E+6	8.972E+3	1.92%	0.00%
100		8	1.429E+6	1.321E+6	1.537E+6	1.445E+6	1.276E+6	1.635E+6	4.571E+4	9.05%	-8.25%

Cell Density Detail

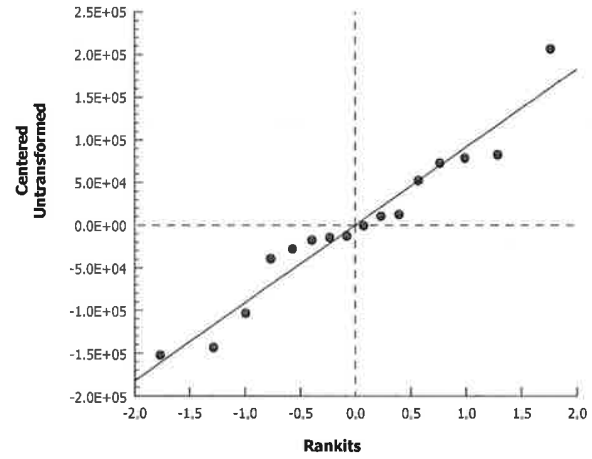
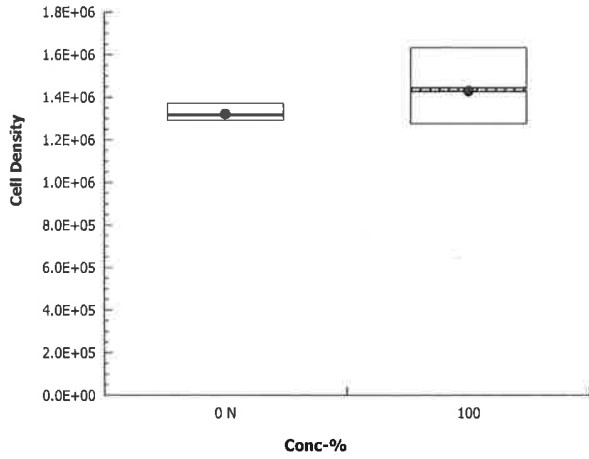
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.307E+6	1.332E+6	1.305E+6	1.319E+6	1.302E+6	1.330E+6	1.372E+6	1.291E+6
100		1.285E+6	1.276E+6	1.635E+6	1.511E+6	1.501E+6	1.325E+6	1.389E+6	1.507E+6

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-4773-3715 Endpoint: Cell Density CETIS Version: CETISv1.9.2
Analyzed: 08 Feb-17 16:53 Analysis: Parametric Bioequivalence-Two Sample Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 08 Feb-17 16:54 (p 1 of 2)
 Test Code: TAM0117.205sel | 00-3763-1547

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 13-4896-8565	Test Type: Cell Growth	Analyst:
Start Date: 25 Jan-17 12:40	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 29 Jan-17	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 83h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 07-7844-7214	Code: TAM0117.205s	Client: Test America Irvine
Sample Date: 23 Jan-17 22:56	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 25 Jan-17 11:42	Source: Bioassay Report	
Sample Age: 38h (1.3 °C)	Station: Outfall011_20170122_Comp (440-174433-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	52			52	52	0	0	0.0%	0
Overall		2	60.5	-47.5	168.5	52	69	8.5	12.02	19.87%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	442.8	439	446.6	439	445	1.356	3.033	0.69%	0
100		5	230	216.8	243.2	216	238	4.764	10.65	4.63%	0
Overall		10	336.4	256	416.8	216	445	35.54	112.4	33.41%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	62			62	62	0	0	0.0%	0
Overall		2	79.5	-142.9	301.9	62	97	17.5	24.75	31.13%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.58	7.418	7.742	7.4	7.7	0.05831	0.1304	1.72%	0
100		5	7.6	7.448	7.752	7.4	7.7	0.05477	0.1225	1.61%	0
Overall		10	7.59	7.504	7.676	7.4	7.7	0.03786	0.1197	1.58%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.02	23.96	24.08	24	24.1	0.01997	0.04466	0.19%	0
100		5	24.02	23.96	24.08	24	24.1	0.01997	0.04466	0.19%	0
Overall		10	24.02	23.99	24.05	24	24.1	0.01333	0.04216	0.18%	0 (0%)

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

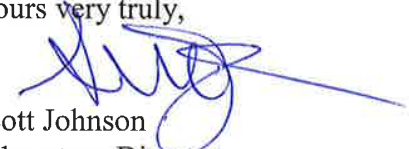
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	02-0919-5357	Test Type:	Cell Growth	Analyst:			
Start Date:	05 Jan-17 12:32	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	09 Jan-17 12:00	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	95h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	05-3109-8838	Code:	SEL010517	Client:	Internal Lab		
Sample Date:	05 Jan-17 12:32	Material:	Cadmium chloride	Project:			
Receipt Date:		Source:	Reference Toxicant				
Sample Age:	n/a	Station:	REF TOX				

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Annual Outfall 001, 002, 011, 018 Outfall 011 Comp		R/A R R R A A A A A A										
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 602-333-0155 Sampler: Bryan Benson		Project Manager: Nancy Gardiner 619-285-7132, 858-337-4061 (cell)		ANALYSIS REQUIRED										
Field Manager: Mark Dominick 818-350-7312, 818-599-0702 (cell)		Total Dissolved Metals: Cu, Pb, Hg, B, Ba, Te, Mn, Sb, As, Be, Cd, Cr, Ni, Se, Ag, Ti, Zn, Co, V, Hardness as CaCO3		Cr (VI), Total (218.9)										
Sample Description	Sample I.D.	Sample Matrix	# of Cont.	Preservative	Bottle #	MS/MSD	Cyanide	Gross Alpha (900.0), Gross Beta (900.0), Tritium (T-3) (906.0), Sr-90 (905.0), Total Combined Radium 226 (903.0 or 903.1) & Radium 228 (904.0), Uranium (908.0), K-40, GS-137 (901.0 or 901.1)	Chronic Toxicity - Selenium	1,4-Dioxane	Total Organic Carbon	Monomethyl Hydrazine	Total Dissolved Metals: Mercury (245.1)	Comments
Outfall 011	Outfall011_20170122_Comp_F	WM	1	None	190	No	X							Filter and preserve with 2lbs of receipt at lab
		WM	1	None	320	No							X	Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
		WM	1	NaOH	220	No								Unfiltered and unpreserved analysis. Separate RAD onto another workorder.
		WM	1	None	225	No		X						Only test if first or second rain events of the year
		WM	1	None	230	No				X				
		WM	6	None	235	No					X			
		WM	3	HCl	240	No					X			
		WM	1	HCl	245	No						X		
		WM	2	None	255	No							X	
		WM	1	None	260	No								X

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 011 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 011 for the same event.

Legend: R-Routine, A-Annual, Q-Quarterly

Relinquished By: <i>[Signature]</i>	Date/Time: 1/24/17 1020	Company: JHA	Received By: <i>[Signature]</i>	Date/Time: 1/24/17 1020	Company: JHA	Turn-around time: (Check) 24 Hour: <input checked="" type="checkbox"/> 72 Hour: <input type="checkbox"/> 48 Hour: <input type="checkbox"/> 5 Day: <input type="checkbox"/> 10 Day: <input checked="" type="checkbox"/> Normal: <input type="checkbox"/>
Relinquished By: <i>[Signature]</i>	Date/Time: 1/24/17 1215	Company: TA	Received By: <i>[Signature]</i>	Date/Time: 1/24/17 1215	Company: TA	Sample Integrity: (Check) Intact: <input type="checkbox"/> On Ice: <input type="checkbox"/>
Relinquished By: <i>[Signature]</i>	Date/Time: 1/24/17 1215	Company: TA	Received By: <i>[Signature]</i>	Date/Time: 1/24/17 1215	Company: TA	Data Requirements: (Check) No Level IV: <input type="checkbox"/> All Level IV: <input checked="" type="checkbox"/>

Temp - 0.9°/1.2° IR-SC6.
 0.7°/1.0°
 1.6°/1.9°



Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Patel, Urvashi		Carrier Tracking No(s): 440-106807-1	
Client Contact: Urvashi.patel@testamericainc.com		E-Mail: urvashi.patel@testamericainc.com		State of Origin: California	
Shipping/Receiving		Phone: 440-174433-1		Page: Page 1 of 1	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 440-174433-1	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		Due Date Requested: 2/3/2017		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
City: West Sacramento		TAT Requested (days):		Analysis Requested:	
State, Zip: CA, 95605		PO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		WO #:		Total Number of containers: 2	
Email:		Project #:		Special Instructions/Note: See OAS: Boeing_wlu to zero, ug/L; Use Boeing glassware.	
Project Name: Boeing SSFL NPDES Outfall 011 Comp		SSOW#:			
Site:		Sample Date: 1/23/17			
Sample Identification - Client ID (Lab ID): Outfall011_20170122_Comp (440-174433-1)		Sample Time: 22:56 Pacific			
Sample Type (C=Comp, G=grab):		Sample Matrix (Water, Brine, Seawater, Other):			
Preservation Code: Water		Field Filtered Sample (Yes or No):			
		Perform MS/MSD (Yes or No):			
		1613B/1613B_Sox_Sep_P Standard List w/ Totals			
		X			

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/method being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by: Date: Time: Method of Shipment: Months
 Return To Client Disposal By Lab Archive For

Relinquished by: <i>Jun Bahy</i>	Date/Time: 1/25/17 17:00	Company: <i>FA</i>	Received by: <i>FedEx</i>	Date/Time: 1/25/17 17:00	Company:
Relinquished by:	Date/Time:	Company:	Received by: <i>ChM by</i>	Date/Time: 1-26-17 9:30	Company: <i>ChM</i>
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seal Intact: Yes No Δ No
 Cooler Temperature(s) °C and Other Remarks: 0.9



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174433-1

Login Number: 174433

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174433-1

Login Number: 174433

List Number: 3

Creator: Pottruff, Reed W

List Source: TestAmerica Denver

List Creation: 01/27/17 10:57 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174433-1

Login Number: 174433

List Number: 4

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/28/17 10:28 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-174433-1	Outfall011_20170124_Comp		59		56		63		59
440-174433-1 - RA	Outfall011_20170124_Comp				57				
MB 320-148436/1-A	Method Blank		57		56		62		58
MB 320-148436/1-A - RA	Method Blank				54				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-174433-1	Outfall011_20170124_Comp		66		58		72		63
440-174433-1 - RA	Outfall011_20170124_Comp								
MB 320-148436/1-A	Method Blank		66		51		68		57
MB 320-148436/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174433-1	Outfall011_20170124_Comp		69		58		67	66	
440-174433-1 - RA	Outfall011_20170124_Comp								
MB 320-148436/1-A	Method Blank		62		53		60	58	
MB 320-148436/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174433-1	Outfall011_20170124_Comp		71		67		65
440-174433-1 - RA	Outfall011_20170124_Comp						
MB 320-148436/1-A	Method Blank		63		59		60
MB 320-148436/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-148436/2-A	Lab Control Sample	65	63	67	64	70	61	75	64
LCSD 320-148436/3-A	Lab Control Sample Dup	57	56	57	52	62	51	59	51

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-148436/2-A	Lab Control Sample	71	59	70	59	68	64	61
LCSD 320-148436/3-A	Lab Control Sample Dup	56	48	56	50	55	52	51

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174433-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174433-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall011_20170124_Comp	440-174433-1	N/A	Water	1/24/2017 9:00:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174433-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- The correction on the original COC was not initialed and dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG. The revised collection times and dates are reflected in the SDG; therefore, the sample collection dates and times on the COC do not match those in the SDG. The collection information in the SDG was used for this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha detector efficiency was less than 20%; therefore, the detected result for gross alpha was qualified as estimated (J) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Gross alpha and gross beta were not different from the method blank at the 5% level of confidence and were therefore qualified as estimated (J) in the site sample. Radium-228 was not different from the method blank at the 1% level of confidence and was therefore qualified as nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were performed on the sample in this SDG for cesium-137. The parent and duplicate were in agreement and no qualifications were required.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were not performed on the sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:



III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401744332

Analysis Method E900

Sample Name Outfall011_20170124_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/24/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.68	1.29	1.66	1.66	pCi/L		J	B, *III, DNQ
Gross Beta Analytes	GROSSBETA	2.75	0.820	0.945	0.945	pCi/L		J	B, DNQ

Analysis Method E901.1

Sample Name Outfall011_20170124_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/24/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	5.49	9.88	16.6	16.6	pCi/L	U	U	
Potassium-40	13966-00-2	-61.8	109	176	176	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall011_20170124_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/24/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.418	0.447	0.703	0.703	pCi/L	U	U	

Analysis Method E904.0

Sample Name Outfall011_20170124_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/24/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	1.67	0.853	1.24	1.24	pCi/L	G	U	B

Analysis Method E905.0

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0301	0.331	0.585	0.585	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-103	157	306	306	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall011_20170124_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174433-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.431	0.560	0.882	0.882	pCi/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174433-2

Client Project/Site: Boeing SSFL NPDES Outfall 011 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/25/2017 7:06:03 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/25/2017 7:06:03 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174433-1	Outfall011_20170124_Comp	Water	01/24/17 09:00	01/24/17 12:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Job ID: 440-174433-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174433-2

Comments

No additional comments.

Receipt

The samples were received on 1/24/2017 12:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.0° C, 1.2° C and 1.9° C.

RAD

Method(s) 904.0: Radium-228 Batch 290050:

The radium-228 detection goal was not met for the following sample due to a reduced aliquot, which can be attributed to the presence of matrix interferences (NCM 104763): Outfall011_20170124_Comp (440-174433-1). Analytical results are reported with the detection limit achieved.

Method(s) PrecSep_0: Radium-228 Prep Batch 160-290050:

The following samples was reduced to 500mL due to possible matrix interferences; sample was brown with sediment.

Outfall011_20170124_Comp (440-174433-1)

Method(s) PrecSep-21: Radium-226 Prep Batch 160-290046:

The following samples was reduced to 500mL due to possible matrix interferences; sample was brown with sediment.

Outfall011_20170124_Comp (440-174433-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.68		1.26	1.29	3.00	1.66	pCi/L	02/17/17 12:35	02/23/17 18:12	1
Gross Beta	2.75		0.772	0.820	4.00	0.945	pCi/L	02/17/17 12:35	02/23/17 18:12	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	5.49	U	9.86	9.88	20.0	16.6	pCi/L	01/27/17 18:38	01/28/17 14:07	1
Potassium-40	-61.8	U	109	109		176	pCi/L	01/27/17 18:38	01/28/17 14:07	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.418	U	0.446	0.447	1.00	0.703	pCi/L	01/30/17 08:47	02/21/17 20:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	62.2		40 - 110					01/30/17 08:47	02/21/17 20:54	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.67	G	0.839	0.853	1.00	1.24	pCi/L	01/30/17 09:12	02/20/17 11:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	62.2		40 - 110					01/30/17 09:12	02/20/17 11:11	1
Y Carrier	84.5		40 - 110					01/30/17 09:12	02/20/17 11:11	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0301	U	0.331	0.331	3.00	0.585	pCi/L	01/31/17 11:55	02/13/17 17:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.1		40 - 110					01/31/17 11:55	02/13/17 17:09	1
Y Carrier	99.1		40 - 110					01/31/17 11:55	02/13/17 17:09	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-103	U	157	157	500	306	pCi/L	02/21/17 12:33	02/22/17 02:19	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.431	U	0.558	0.560	1.00	0.882	pCi/L	02/01/17 09:51	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	69.9		30 - 110					02/01/17 09:51	02/14/17 15:44	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Client Sample ID: Outfall011_20170124_Comp

Lab Sample ID: 440-174433-1

Date Collected: 01/24/17 09:00

Matrix: Water

Date Received: 01/24/17 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	293094	02/17/17 12:35	MRB	TAL SL
Total/NA	Analysis	900.0		1			294104	02/23/17 18:12	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289570	01/27/17 18:38	R1S	TAL SL
Total/NA	Analysis	901.1		1			289577	01/28/17 14:07	CDR	TAL SL
Total/NA	Prep	PrecSep-21			500.41 mL	1.0 g	290046	01/30/17 08:47	AS	TAL SL
Total/NA	Analysis	903.0		1			293668	02/21/17 20:54	RTM	TAL SL
Total/NA	Prep	PrecSep_0			500.41 mL	1.0 g	290050	01/30/17 09:12	AS	TAL SL
Total/NA	Analysis	904.0		1			293437	02/20/17 11:11	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.03 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292017	02/13/17 17:09	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.4 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/22/17 02:19	ALD	TAL SL
Total/NA	Prep	ExtChrom			100.64 mL	1.0 mL	290556	02/01/17 09:51	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292524	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-293094/1-A
Matrix: Water
Analysis Batch: 294104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293094

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.1328	U	0.543	0.544	3.00	1.01	pCi/L	02/17/17 12:35	02/23/17 18:12	1
Gross Beta	0.5753	U	0.566	0.569	4.00	0.915	pCi/L	02/17/17 12:35	02/23/17 18:12	1

Lab Sample ID: LCS 160-293094/2-A
Matrix: Water
Analysis Batch: 294104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293094

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	47.33		6.84	3.00	1.74	pCi/L	95	73 - 133

Lab Sample ID: LCSB 160-293094/3-A
Matrix: Water
Analysis Batch: 294104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293094

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.1	91.31		9.66	4.00	0.968	pCi/L	100	75 - 125

Lab Sample ID: 160-20884-A-1-B MS
Matrix: Water
Analysis Batch: 294104

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293094

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	-0.168	U	49.9	44.33		6.01	3.00	1.00	pCi/L	89	60 - 140

Lab Sample ID: 160-20884-A-1-C MSBT
Matrix: Water
Analysis Batch: 294105

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293094

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	0.806	U	91.1	83.73		8.87	4.00	1.05	pCi/L	92	60 - 140

Lab Sample ID: 160-20884-A-1-D DU
Matrix: Water
Analysis Batch: 294105

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 293094

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total	RL	MDC	Unit	RER	RER Limit
					Uncert. (2σ+/-)					
Gross Alpha	-0.168	U	0.4233	U	0.581	3.00	0.974	pCi/L	0.53	1
Gross Beta	0.806	U	0.6876	U	0.529	4.00	0.812	pCi/L	0.11	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289570/1-A
Matrix: Water
Analysis Batch: 289578

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289570

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.7344	U	10.5	10.5	20.0	18.4	pCi/L	01/27/17 18:38	01/28/17 13:06	1
Potassium-40	-69.25	U	134	135		194	pCi/L	01/27/17 18:38	01/28/17 13:06	1

Lab Sample ID: LCS 160-289570/2-A
Matrix: Water
Analysis Batch: 289576

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289570

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	127100		14700		406	pCi/L	93	90 - 111
Cesium-137	47100	46800		4690	20.0	122	pCi/L	99	90 - 111
Cobalt-60	40000	39130		3870		66.2	pCi/L	98	89 - 110

Lab Sample ID: 440-174433-1 DU
Matrix: Water
Analysis Batch: 289578

Client Sample ID: Outfall011_20170124_Comp
Prep Type: Total/NA
Prep Batch: 289570

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	5.49	U	0.0000	U	3.79	20.0	14.5	pCi/L	0.40	1
Potassium-40	-61.8	U	19.52	U	124		157	pCi/L	0.35	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290046/1-A
Matrix: Water
Analysis Batch: 293678

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290046

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1166	U	0.240	0.240	1.00	0.433	pCi/L	01/30/17 08:47	02/21/17 19:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	65.2		40 - 110					01/30/17 08:47	02/21/17 19:00	1

Lab Sample ID: LCS 160-290046/2-A
Matrix: Water
Analysis Batch: 293678

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290046

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	6.01	6.855		0.996	1.00	0.281	pCi/L	114	68 - 137
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	90.3		40 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 600-142660-B-23-A MS
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290046

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.640		6.00	7.328		1.10	1.00	0.410	pCi/L	111	75 - 138
Carrier	MS MS %Yield Qualifier		Limits								
Ba Carrier	81.1		40 - 110								

Lab Sample ID: 600-142660-C-23-B MSD
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290046

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.640		6.01	6.216		1.01	1.00	0.405	pCi/L	93	75 - 138	0.53	1
Carrier	MSD MSD %Yield Qualifier		Limits										
Ba Carrier	77.9		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290050/1-A
Matrix: Water
Analysis Batch: 293435

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290050

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.4963	U	0.382	0.385	1.00	0.604	pCi/L	01/30/17 09:12	02/20/17 11:24	1
Carrier	MB MB %Yield Qualifier		Limits		Prepared		Analyzed		Dil Fac	
Ba Carrier	65.2		40 - 110		01/30/17 09:12		02/20/17 11:24		1	
Y Carrier	89.7		40 - 110		01/30/17 09:12		02/20/17 11:24		1	

Lab Sample ID: LCS 160-290050/2-A
Matrix: Water
Analysis Batch: 293435

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290050

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.08		1.74	1.00	0.506	pCi/L	116	56 - 140
Carrier	LCS LCS %Yield Qualifier		Limits						
Ba Carrier	90.3		40 - 110						
Y Carrier	86.0		40 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 600-142660-B-23-B MS
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290050

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.415	U	13.8	16.98		1.84	1.00	0.493	pCi/L	123	45 - 150
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	81.1		40 - 110								
Y Carrier	86.0		40 - 110								

Lab Sample ID: 600-142660-C-23-D MSD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290050

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.415	U	13.8	16.54		1.81	1.00	0.522	pCi/L	120	45 - 150	0.12	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	77.9		40 - 110										
Y Carrier	86.4		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1
Carrier	%Yield	MB Qualifier	Limits							
Sr Carrier	84.3		40 - 110							
Y Carrier	98.7		40 - 110							

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-174110-G-1-E MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0527	U	17.0	16.86		1.72	3.00	0.506	pCi/L	99	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	84.4		40 - 110								
Y Carrier	98.3		40 - 110								

Lab Sample ID: 440-174110-G-1-F MSD
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0527	U	16.9	16.45		1.69	3.00	0.548	pCi/L	97	19 - 150	0.12	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	84.9		40 - 110										
Y Carrier	97.9		40 - 110										

Lab Sample ID: 440-174317-F-1-H MSD
Matrix: Water
Analysis Batch: 292017

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.00912	U	8.51	7.960		0.818	3.00	0.261	pCi/L	94	19 - 150	0.19	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	86.7		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-O-1-B MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-O-1-C MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-F-1-E MS
Matrix: Water
Analysis Batch: 292514

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limit
Uranium-234	-0.112	U	63.6	66.32		8.05	1.00	0.722	pCi/L	104	65 - 146	
Uranium-238	-0.0670	U	65.0	64.35		7.86	1.00	0.380	pCi/L	99	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	78.6		30 - 110									

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER	Limit	
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146	0.04	1	
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143	0.29	1	
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	84.1		30 - 110											

Lab Sample ID: 440-174317-Q-1-I MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limit
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146	
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	78.6		30 - 110									

Lab Sample ID: 440-174317-Q-1-J MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER	Limit	
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146	0.22	1	
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143	0.35	1	
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	86.7		30 - 110											

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Rad

Prep Batch: 289570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289570/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289570/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174433-1 DU	Outfall011_20170124_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	PrecSep-21	
MB 160-290046/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290046/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
600-142660-B-23-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
600-142660-C-23-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 290050

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	PrecSep_0	
MB 160-290050/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290050/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
600-142660-B-23-B MS	Matrix Spike	Total/NA	Water	PrecSep_0	
600-142660-C-23-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174110-G-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-174110-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	
440-174317-F-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-Q-1-I MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-174317-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 293094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	Evaporation	
MB 160-293094/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-293094/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-293094/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
160-20884-A-1-B MS	Matrix Spike	Total/NA	Water	Evaporation	
160-20884-A-1-C MSBT	Matrix Spike	Total/NA	Water	Evaporation	
160-20884-A-1-D DU	Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174433-1	Outfall011_20170124_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-174317-O-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174433-2

Login Number: 174433

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174433-2

Login Number: 174433

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/26/17 02:15 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174433-1	Outfall011_20170124_Comp	62.2
600-142660-B-23-A MS	Matrix Spike	81.1
600-142660-C-23-B MSD	Matrix Spike Duplicate	77.9
LCS 160-290046/2-A	Lab Control Sample	90.3
MB 160-290046/1-A	Method Blank	65.2

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174433-1	Outfall011_20170124_Comp	62.2	84.5
600-142660-B-23-B MS	Matrix Spike	81.1	86.0
600-142660-C-23-D MSD	Matrix Spike Duplicate	77.9	86.4
LCS 160-290050/2-A	Lab Control Sample	90.3	86.0
MB 160-290050/1-A	Method Blank	65.2	89.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174110-G-1-E MS	Matrix Spike	84.4	98.3
440-174110-G-1-F MSD	Matrix Spike Duplicate	84.9	97.9
440-174317-F-1-H MSD	Matrix Spike Duplicate	86.7	97.2
440-174433-1	Outfall011_20170124_Comp	80.1	99.1
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-F-1-E MS	Matrix Spike	78.6
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Boeing SSFL NPDES Outfall 011 Comp

TestAmerica Job ID: 440-174433-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-Q-1-I MS	Matrix Spike	78.6
440-174317-Q-1-J MSD	Matrix Spike Duplicate	86.7
440-174433-1	Outfall011_20170124_Comp	69.9
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177400-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

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- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177400-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall011_20170217_Grab	440-177400-1	N/A	Water	2/17/2017 5:00:00 PM	E120.1, E1664, E624, SM2540F, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177400-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Analysis for Human Bacteroides was subcontracted to Source Molecular laboratory.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170217 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA Methods 1664A and 120.1*, *SAM348-357* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The subcontract laboratory received the sample for Human Bacteroides analysis after the holding time requirement (24-48 hours); however, the sample result was not qualified as this is a presence/absence analysis. The analytical holding time for the remaining analyses, as noted below, were met.

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance



IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids. The case narrative noted that the negative controls were met for the Human Bacteroides test.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%. Positive controls were met for the Human Bacteroides test.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance or settleable solids analyses and no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401774001

Analysis Method DHC qPCR

Sample Name Outfall011_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 5:00:00 PM Validation Level: 8

Lab Sample Name: SM-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	present			CEs/100	present		

Analysis Method E120.1

Sample Name Outfall011_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 5:00:00 PM Validation Level: 8

Lab Sample Name: 440-177400-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	79	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall011_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 5:00:00 PM Validation Level: 8

Lab Sample Name: 440-177400-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREASE	12	5.3	1.5	mg/L			

Analysis Method E624

Sample Name Outfall011_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 5:00:00 PM Validation Level: 8

Lab Sample Name: 440-177400-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method *SM2540F*

Sample Name Outfall011_20170217_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/17/2017 5:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177400-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	0.30	0.10	0.10	ml/l/hr	BU		

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177400-1

Client Project/Site: Routine Outfallb011 Grab

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/23/2017 12:07:19 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/23/2017 12:07:19 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177400-1	Outfall011_20170217_Grab	Water	02/17/17 17:00	02/18/17 18:40
440-177400-3	TB-20170217	Water	02/17/17 17:00	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Job ID: 440-177400-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177400-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 3.5° C and 4.6° C.

GC/MS VOA

Method(s) 624, 8260B: The method blank for analytical batch 440-391545 contained Methylene Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

Method(s) 120.1, SM 2510B: The conductivity results were reported at a dilution and may have increased error compared to an undiluted samples. 2510B

(440-176948-B-1)

Method(s) SM 2540F: The following sample was analyzed outside of analytical holding time due to employee oversight.:
Outfall011_20170217_Grab (440-177400-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390996 and analytical batch 440-391205. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Client Sample ID: Outfall011_20170217_Grab

Lab Sample ID: 440-177400-1

Date Collected: 02/17/17 17:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 14:31	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 14:31	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 14:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		80 - 120					03/02/17 14:31	1
Dibromofluoromethane (Surr)	100		76 - 132					03/02/17 14:31	1
Toluene-d8 (Surr)	103		80 - 128					03/02/17 14:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	12		5.3	1.5	mg/L		02/28/17 20:36	03/01/17 00:38	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	79		1.0	1.0	umhos/cm			02/21/17 07:46	1
Settleable Solids	0.30	BU	0.10	0.10	mL/L/Hr			02/20/17 15:18	1

Client Sample ID: TB-20170217

Lab Sample ID: 440-177400-3

Date Collected: 02/17/17 17:00

Matrix: Water

Date Received: 02/18/17 18:40

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 14:57	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 14:57	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 14:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120					03/02/17 14:57	1
Dibromofluoromethane (Surr)	99		76 - 132					03/02/17 14:57	1
Toluene-d8 (Surr)	109		80 - 128					03/02/17 14:57	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Client Sample ID: Outfall011_20170217_Grab

Lab Sample ID: 440-177400-1

Date Collected: 02/17/17 17:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391545	03/02/17 14:31	RM	TAL IRV
Total/NA	Analysis	120.1		1			389479	02/21/17 07:46	XL	TAL IRV
Total/NA	Prep	1664A			940 mL	1000 mL	390996	02/28/17 20:36	JSS	TAL IRV
Total/NA	Analysis	1664A		1			391205	03/01/17 00:38	BAW	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	389345	02/20/17 15:18	ST	TAL IRV

Client Sample ID: TB-20170217

Lab Sample ID: 440-177400-3

Date Collected: 02/17/17 17:00

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391545	03/02/17 14:57	RM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-391545/4
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 09:15	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 09:15	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 09:15	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 09:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		80 - 120		03/02/17 09:15	1
Dibromofluoromethane (Surr)	100		76 - 132		03/02/17 09:15	1
Toluene-d8 (Surr)	110		80 - 128		03/02/17 09:15	1

Lab Sample ID: LCS 440-391545/5
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	23.6		ug/L		94	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.4		ug/L		101	63 - 130
1,1,2-Trichloroethane	25.0	26.5		ug/L		106	70 - 130
1,1-Dichloroethane	25.0	24.5		ug/L		98	64 - 130
1,1-Dichloroethene	25.0	22.1		ug/L		89	70 - 130
1,2-Dichlorobenzene	25.0	26.7		ug/L		107	70 - 130
1,2-Dichloroethane	25.0	23.8		ug/L		95	57 - 138
1,2-Dichloropropane	25.0	24.7		ug/L		99	67 - 130
1,3-Dichlorobenzene	25.0	25.4		ug/L		102	70 - 130
1,4-Dichlorobenzene	25.0	26.2		ug/L		105	70 - 130
Benzene	25.0	24.1		ug/L		96	68 - 130
Bromoform	25.0	23.8		ug/L		95	60 - 148
Bromomethane	25.0	24.5		ug/L		98	64 - 139
Carbon tetrachloride	25.0	23.5		ug/L		94	60 - 150
Chlorobenzene	25.0	25.7		ug/L		103	70 - 130
Dibromochloromethane	25.0	24.7		ug/L		99	69 - 145
Chloroethane	25.0	25.4		ug/L		102	64 - 135
Chloroform	25.0	24.0		ug/L		96	70 - 130
Chloromethane	25.0	28.4		ug/L		114	47 - 140
cis-1,3-Dichloropropene	25.0	25.5		ug/L		102	70 - 133
Bromodichloromethane	25.0	24.3		ug/L		97	70 - 132
Ethylbenzene	25.0	25.5		ug/L		102	70 - 130
Methylene Chloride	25.0	24.0		ug/L		96	52 - 130
Tetrachloroethene	25.0	25.6		ug/L		103	70 - 130
Toluene	25.0	25.5		ug/L		102	70 - 130
trans-1,2-Dichloroethene	25.0	25.0		ug/L		100	70 - 130
trans-1,3-Dichloropropene	25.0	24.8		ug/L		99	70 - 132
Vinyl chloride	25.0	26.4		ug/L		105	59 - 133
Trichloroethene	25.0	24.5		ug/L		98	70 - 130
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	70 - 133
Naphthalene	25.0	23.9		ug/L		96	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-391545/5
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	99		76 - 132
Toluene-d8 (Surr)	108		80 - 128

Lab Sample ID: 440-178121-A-1 MS
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
1,1,1-Trichloroethane	ND		25.0	25.2		ug/L		101	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	27.0		ug/L		108	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.8		ug/L		111	70 - 130
1,1-Dichloroethane	ND		25.0	26.2		ug/L		105	65 - 130
1,1-Dichloroethene	ND		25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	ND		25.0	27.0		ug/L		108	70 - 130
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146
1,2-Dichloropropane	ND		25.0	26.3		ug/L		105	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.2		ug/L		109	70 - 130
1,4-Dichlorobenzene	ND		25.0	27.8		ug/L		111	70 - 130
Benzene	ND		25.0	25.6		ug/L		102	66 - 130
Bromoform	ND		25.0	24.8		ug/L		99	59 - 150
Bromomethane	ND		25.0	25.5		ug/L		102	62 - 131
Carbon tetrachloride	ND		25.0	25.2		ug/L		101	60 - 150
Chlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130
Dibromochloromethane	ND		25.0	26.3		ug/L		105	70 - 148
Chloroethane	ND		25.0	27.2		ug/L		109	68 - 130
Chloroform	ND		25.0	25.8		ug/L		103	70 - 130
Chloromethane	ND		25.0	30.4		ug/L		122	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.6		ug/L		106	70 - 133
Bromodichloromethane	ND		25.0	25.8		ug/L		103	70 - 138
Ethylbenzene	ND		25.0	27.1		ug/L		108	70 - 130
Methylene Chloride	ND		25.0	24.7		ug/L		99	52 - 130
Tetrachloroethene	ND		25.0	27.5		ug/L		110	70 - 137
Toluene	ND		25.0	27.3		ug/L		109	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.2		ug/L		105	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	70 - 138
Vinyl chloride	ND		25.0	27.9		ug/L		112	50 - 137
Trichloroethene	0.56		25.0	26.4		ug/L		103	70 - 130
cis-1,2-Dichloroethene	1.5		25.0	26.9		ug/L		101	70 - 130
Naphthalene	ND		25.0	25.7		ug/L		103	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	102		76 - 132
Toluene-d8 (Surr)	109		80 - 128

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-178121-A-1 MSD
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.0		ug/L		100	70 - 130	1	20
1,1,2,2-Tetrachloroethane	ND		25.0	29.7		ug/L		119	63 - 130	10	30
1,1,2-Trichloroethane	ND		25.0	28.7		ug/L		115	70 - 130	3	25
1,1-Dichloroethane	ND		25.0	25.9		ug/L		104	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	23.5		ug/L		94	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	27.6		ug/L		110	70 - 130	2	20
1,2-Dichloroethane	ND		25.0	25.4		ug/L		102	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	26.3		ug/L		105	69 - 130	0	20
1,3-Dichlorobenzene	ND		25.0	26.8		ug/L		107	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	27.6		ug/L		111	70 - 130	1	20
Benzene	ND		25.0	25.3		ug/L		101	66 - 130	1	20
Bromoform	ND		25.0	26.8		ug/L		107	59 - 150	8	25
Bromomethane	ND		25.0	25.5		ug/L		102	62 - 131	0	25
Carbon tetrachloride	ND		25.0	24.7		ug/L		99	60 - 150	2	25
Chlorobenzene	ND		25.0	26.9		ug/L		107	70 - 130	1	20
Dibromochloromethane	ND		25.0	26.9		ug/L		107	70 - 148	2	25
Chloroethane	ND		25.0	26.9		ug/L		107	68 - 130	1	25
Chloroform	ND		25.0	25.5		ug/L		102	70 - 130	1	20
Chloromethane	ND		25.0	30.1		ug/L		120	39 - 144	1	25
cis-1,3-Dichloropropene	ND		25.0	26.6		ug/L		106	70 - 133	0	20
Bromodichloromethane	ND		25.0	25.4		ug/L		102	70 - 138	1	20
Ethylbenzene	ND		25.0	26.8		ug/L		107	70 - 130	1	20
Methylene Chloride	ND		25.0	24.3		ug/L		97	52 - 130	1	20
Tetrachloroethene	ND		25.0	27.4		ug/L		110	70 - 137	0	20
Toluene	ND		25.0	27.1		ug/L		108	70 - 130	1	20
trans-1,2-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	26.7		ug/L		107	70 - 138	4	25
Vinyl chloride	ND		25.0	27.9		ug/L		112	50 - 137	0	30
Trichloroethene	0.56		25.0	26.1		ug/L		102	70 - 130	1	20
cis-1,2-Dichloroethene	1.5		25.0	26.5		ug/L		100	70 - 130	1	20
Naphthalene	ND		25.0	28.0		ug/L		112	60 - 140	9	30

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	100		76 - 132
Toluene-d8 (Surr)	108		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-389479/3
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0 umhos/cm			02/21/17 07:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-389479/4
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	761		umhos/cm		99	90 - 110

Lab Sample ID: 440-177384-C-1 DU
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	22		22.9		umhos/cm		4	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390996/1-A
Matrix: Water
Analysis Batch: 391205

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390996

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/28/17 09:52	03/01/17 00:38	1

Lab Sample ID: LCS 440-390996/2-A
Matrix: Water
Analysis Batch: 391205

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390996

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.1		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-390996/3-A
Matrix: Water
Analysis Batch: 391205

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390996

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	37.3		mg/L		93	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

GC/MS VOA

Analysis Batch: 391545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177400-1	Outfall011_20170217_Grab	Total/NA	Water	624	
440-177400-3	TB-20170217	Total/NA	Water	624	
MB 440-391545/4	Method Blank	Total/NA	Water	624	
LCS 440-391545/5	Lab Control Sample	Total/NA	Water	624	
440-178121-A-1 MS	Matrix Spike	Total/NA	Water	624	
440-178121-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 389345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177400-1	Outfall011_20170217_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 389479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177400-1	Outfall011_20170217_Grab	Total/NA	Water	120.1	
MB 440-389479/3	Method Blank	Total/NA	Water	120.1	
LCS 440-389479/4	Lab Control Sample	Total/NA	Water	120.1	
440-177384-C-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 390996

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177400-1	Outfall011_20170217_Grab	Total/NA	Water	1664A	
MB 440-390996/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390996/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390996/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 391205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177400-1	Outfall011_20170217_Grab	Total/NA	Water	1664A	390996
MB 440-390996/1-A	Method Blank	Total/NA	Water	1664A	390996
LCS 440-390996/2-A	Lab Control Sample	Total/NA	Water	1664A	390996
LCSD 440-390996/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390996

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfallb011 Grab

TestAmerica Job ID: 440-177400-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1-Dichloroethane
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichloroethane
624		Water	Trichloroethene



CHAIN OF CUSTODY FORM

YCLW29T3

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Unvashi Patel 17461 Deitan Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 011 Grab		Field Readings Field Readings: (Include units) Time of Readings: 16:55 DO 13.16 mg/L pH 7.39 pH unit Temp 10.04 °C		Meter serial #									
Test America's services under this CoC shall be performed in accordance with the TACs with Banker Service Agreement 2015-16, TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories, Inc.		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)		Field readings QC Checked by: Bill Clark		Comments									
Sampler: Dan Smith		Field Manager: Mark Dominick 818.350.7312, 618.595.0702 (cell)		Date/Time: 2-18-18 / 1400		Comments									
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSM/SD	Oil & Grease (E1644-HM)	VOCs - only 1,1-DCE, 1,2-DCA, TCE (E624)	Settleable Solids (E160.5 (SM2540F))	Conductivity (SM2510B / E120.1)	ANALYSIS REQUIRED	Field Readings	Meter serial #
Outfall 011	Outfall011_20170217_Grab	2/17/2017 11:00	WM	1L Glass Amber	2	HCl	15	No	X						
			WM	40 mL VOA	3	HCl	30	No			X				
			WM	1L Poly	1	None	70	No				X			
			WM	500 mL Poly	1	None	75	No					X		
			WM	1L Glass Amber	2	HCl	15	No	H						
			WM	40 mL VOA	3	HCl	30	No		H					
			WM	500 mL Poly	1	None	75	No				H			
			WG	40 mL VOA	3	HCl	30	No		X					
Trip Blank	TB-20170217	2/17/2017													



Relinquished By: <i>[Signature]</i> Date/Time: 2-18-17 17:00 Company: GRESTON	Received By: <i>[Signature]</i> Date/Time: 2-18-17 18:40 Company:
Relinquished By: <i>[Signature]</i> Date/Time: 2-18-17 18:40 Company:	Received By: <i>[Signature]</i> Date/Time: 2-18-17 18:40 Company:
Relinquished By: <i>[Signature]</i> Date/Time: 2-18-17 18:40 Company:	Received By: <i>[Signature]</i> Date/Time: 2-18-17 18:40 Company:

Handwritten notes: 4-2/4-18 3-2/3-5 1-2/1-17 10-SCU



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177400-1

Login Number: 177400

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177399-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-177399-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall011_20170218_Comp	440-177399-1	N/A	Water	2/18/17 12:55 PM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall011_20170218_Comp_F	440-177399-3	N/A	Water	2/18/17 12:55 PM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177399-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine, TA-Denver, and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except TCDD and TCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample results above the reporting limit. The peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall011_20170218_Comp; however, as the



associated isomer was not qualified as a nondetect, total HpCDD was qualified as estimated (J). The reviewer verified that peaks comprising the results for remaining totals in the sample included more peaks than the method blank totals. The sample results for totals HxCDD, HxCDF, HpCDF, PeCDD, and PeCDF were therefore qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for those results flagged as EMPC values by the laboratory. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. As 2,3,7,8-TCDF was not detected in the initial analysis of the sample, confirmation analysis was not necessary.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8 AND 245.1 — METALS AND MERCURY

Michael Cherny of MEC^X reviewed the SDG on April 14, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Outfall011_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis five days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with analysis of total metals; this review is based on summary data for that CRQL.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total metals; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total metals; this review is based on summary data only for this ICSA analysis.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on Outfall011_20170218_Comp_F for dissolved mercury. Recoveries



were within the NFG control limits of 75-125% and the RPD was $\leq 20\%$. MEC^X evaluated method accuracy for the remaining metals based on the LCS results.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The target compound was not detected in method blank.



V.3.2 LABORATORY CONTROL SAMPLES

The recovery of alpha BHC was within the laboratory control limits of 37-134%.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the sample of this SDG. Recoveries of alpha BHC and the RPD were within the laboratory control limits of 40-120% and $\leq 30\%$, respectively.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.



VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).



VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits in the retained analysis of the sample (see Matrix Spike/Matrix Spike Duplicate section).

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy based on the LCS results. The laboratory re-extracted the site sample in this SDG because the MSD extract of a batch MS/MSD was lost in the preparation process. The laboratory reported both analyses of the site sample in this SDG, Outfall011_20170218. As the site sample in this SDG was not the parent sample, the original analysis was retained, and the reanalysis results rejected (R).

VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1, 300.0, and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

VIII.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for chronic toxicity analysis past the 36-hour holding time and was analyzed 40 hours past the required holding time. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.



VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPD for BOD was $\leq 20\%$.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall011_20170218_Comp for TSS. The RPD was $\leq 10\%$.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported between the RL and the MDL were qualified as estimated (J) and coded with a DNQ to comply with the NPDES reporting requirements. Reported nondetects are valid to the MDL.

Turbidity in sample Outfall011_20170218_Comp was reported from a 20 \times dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773991

Analysis Method E1613B

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000048	0.000096	0.00000093	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00056	0.000096	0.0000017	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.000023	0.000048	0.00000075	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000055	0.000048	0.0000014	ug/L	MB		
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000018	0.000048	0.0000010	ug/L	J,DXq	UJ	*III
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000023	0.000048	0.00000046	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000048	0.00000053	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.0000010	0.000048	0.00000047	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000021	0.000048	0.00000059	ug/L	J,DXq	UJ	*III
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	ND	0.000048	0.00000047	ug/L	U	U	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000016	0.000048	0.00000048	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000048	0.00000049	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000072	0.000048	0.00000054	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000012	0.000048	0.00000042	ug/L	J,DXMBq	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000075	0.000048	0.00000048	ug/L	J,DXq	UJ	*III
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000096	0.00000036	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000096	0.00000032	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000046	0.000048	0.00000087	ug/L	J,DXMBq	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00013	0.000048	0.0000014	ug/L	MB	J	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.000017	0.000048	0.00000046	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000010	0.000048	0.00000053	ug/L	J,DXMBq	J	B, DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000037	0.000048	0.00000048	ug/L	J,DXMBq	J	B, DNQ, *III

Friday, April 14, 2017

Analysis Method E1613B

Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000012	0.000048	0.00000054	ug/L	J,DXq	J	B, DNQ, *III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	ND	0.0000096	0.00000036	ug/L	U	U	
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	0.00000047	0.0000096	0.00000032	ug/L	J,DXq	J	DNQ, *III

Analysis Method E180.1

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	56	2.0	0.80	NTU			

Analysis Method E200.8

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	4.3	2.0	0.50	ug/L			
Lead	T	7439-92-1	2.0	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Sample Name Outfall011_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	3.5	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall011_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:55:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177399-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:55:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	3.0	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	1.0	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.0	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	4.2	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:55:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:55:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0047	0.0024	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:55:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	5.71	0.476	ug/L	U	R	D

Analysis Method E625

2,4,6-Trichlorophenol	N	88-06-2	ND	6.19	0.515	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.15	2.06	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	4.76	1.90	ug/L	U	R	D
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.15	2.06	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.76	1.90	ug/L	U	R	D
N-Nitrosodimethylamine	N	62-75-9	ND	5.15	1.03	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	4.76	0.952	ug/L	U	R	D
Pentachlorophenol	N	87-86-5	ND	5.15	1.03	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	4.76	0.952	ug/L	U	R	D

Analysis Method EPA-821-R-02-013

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	27.61			% SURV		J	H

Analysis Method SM2540C

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	100	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	50	5.0	2.5	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method *SM4500-NH3G*

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method *SM5210B*

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	BOD		1.9	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method *SM5540*

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.077	0.10	0.050	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177399-1

Client Project/Site: Routine Outfall 011 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 5:03:55 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 5:03:55 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177399-1	Outfall011_20170218_Comp	Water	02/18/17 12:55	02/18/17 18:40
440-177399-3	Outfall011_20170218_Comp_F	Water	02/18/17 12:55	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Job ID: 440-177399-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177399-1**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 3.5° C and 4.6° C.

GC/MS Semi VOA

Method(s) 625: There is no matrix spike duplicate (MSD) from preparation batch 440-389492 available to report for the following samples: (440-177394-J-1-A MS). The MSD was lost during sample prep. Data from associated samples is reported as secondary.

Method(s) 625: The percent recovery of surrogate phenol-d6 from sample Outfall011_20170218_Comp (440-177399-1) failed below the lower acceptance limit. The cause is likely less than ideal extraction technique as the first extraction for this sample from prep batch 440-389492 met surrogate acceptance limits. The sample results of nondetect for all targets is confirmed by the original extraction result. The sample is reported as primary from this batch and secondary from the original batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Chloride and Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389086 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		5.71	0.476	ug/L		02/25/17 09:17	02/28/17 16:19	1
Bis(2-ethylhexyl) phthalate	ND		4.76	1.90	ug/L		02/25/17 09:17	02/28/17 16:19	1
N-Nitrosodimethylamine	ND		4.76	0.952	ug/L		02/25/17 09:17	02/28/17 16:19	1
Pentachlorophenol	ND		4.76	0.952	ug/L		02/25/17 09:17	02/28/17 16:19	1
2,4-Dinitrotoluene	ND		4.76	1.90	ug/L		02/25/17 09:17	02/28/17 16:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	68		40 - 120	02/21/17 09:15	02/24/17 14:16	1
2,4,6-Tribromophenol	72		40 - 120	02/25/17 09:17	02/28/17 16:19	1
2-Fluorobiphenyl	68		50 - 120	02/21/17 09:15	02/24/17 14:16	1
2-Fluorobiphenyl	67		50 - 120	02/25/17 09:17	02/28/17 16:19	1
2-Fluorophenol	50		30 - 120	02/21/17 09:15	02/24/17 14:16	1
2-Fluorophenol	60		30 - 120	02/25/17 09:17	02/28/17 16:19	1
Nitrobenzene-d5	64		45 - 120	02/21/17 09:15	02/24/17 14:16	1
Nitrobenzene-d5	63		45 - 120	02/25/17 09:17	02/28/17 16:19	1
Phenol-d6	48		35 - 120	02/21/17 09:15	02/24/17 14:16	1
Phenol-d6	10	LG	35 - 120	02/25/17 09:17	02/28/17 16:19	1
Terphenyl-d14	61		37 - 144	02/21/17 09:15	02/24/17 14:16	1
Terphenyl-d14	42		37 - 144	02/25/17 09:17	02/28/17 16:19	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0047	0.0024	ug/L		02/21/17 06:54	02/23/17 00:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	69		10 - 150	02/21/17 06:54	02/23/17 00:27	1
DCB Decachlorobiphenyl (Surr)	82		18 - 134	02/21/17 06:54	02/23/17 00:27	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3.0		0.50	0.25	mg/L			02/18/17 22:03	1
Nitrate as N	1.0		0.11	0.055	mg/L			02/18/17 22:03	1
Nitrite as N	ND		0.15	0.070	mg/L			02/18/17 22:03	1
Sulfate	4.2		0.50	0.25	mg/L			02/18/17 22:03	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 16:52	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.0		0.15	0.070	mg/L			03/03/17 11:33	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000096	0.0000003	ug/L		02/27/17 08:20	03/01/17 04:14	1
2,3,7,8-TCDF	ND		0.0000096	0.0000003	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,7,8-PeCDD	0.0000072	J,DX	0.000048	0.0000005	ug/L		02/27/17 08:20	03/01/17 04:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8-PeCDF	ND		0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
2,3,4,7,8-PeCDF	0.00000075	J,DX q	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,4,7,8-HxCDD	ND		0.000048	0.0000005	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,6,7,8-HxCDD	0.0000021	J,DX q	0.000048	0.0000005	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,7,8,9-HxCDD	0.0000016	J,DX q	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,4,7,8-HxCDF	0.0000023	J,DX	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,6,7,8-HxCDF	0.0000010	J,DX MB q	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,7,8,9-HxCDF	ND		0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
2,3,4,6,7,8-HxCDF	0.0000012	J,DX MB q	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,4,6,7,8-HpCDD	0.000055	MB	0.000048	0.0000014	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,4,6,7,8-HpCDF	0.000023	J,DX MB	0.000048	0.0000007	ug/L		02/27/17 08:20	03/01/17 04:14	1
1,2,3,4,7,8,9-HpCDF	0.0000018	J,DX q	0.000048	0.0000010	ug/L		02/27/17 08:20	03/01/17 04:14	1
OCDD	0.00056	MB	0.000096	0.0000017	ug/L		02/27/17 08:20	03/01/17 04:14	1
OCDF	0.000048	J,DX MB	0.000096	0.0000009	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total TCDD	0.00000047	J,DX q	0.0000096	0.0000003	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total TCDF	ND		0.0000096	0.0000003	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total PeCDD	0.0000012	J,DX q	0.000048	0.0000005	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total PeCDF	0.0000037	J,DX MB q	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total HxCDD	0.000010	J,DX MB q	0.000048	0.0000005	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total HxCDF	0.000017	J,DX MB q	0.000048	0.0000004	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total HpCDD	0.00013	MB	0.000048	0.0000014	ug/L		02/27/17 08:20	03/01/17 04:14	1
Total HpCDF	0.000046	J,DX MB q	0.000048	0.0000008	ug/L		02/27/17 08:20	03/01/17 04:14	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C-2,3,7,8-TCDD	69		25 - 164				02/27/17 08:20	03/01/17 04:14	1
13C-2,3,7,8-TCDF	68		24 - 169				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,7,8-PeCDD	57		25 - 181				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,7,8-PeCDF	61		24 - 185				02/27/17 08:20	03/01/17 04:14	1
13C-2,3,4,7,8-PeCDF	68		21 - 178				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,4,7,8-HxCDD	84		32 - 141				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,6,7,8-HxCDD	78		28 - 130				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,4,7,8-HxCDF	82		26 - 152				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,6,7,8-HxCDF	73		26 - 123				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,7,8,9-HxCDF	65		29 - 147				02/27/17 08:20	03/01/17 04:14	1
13C-2,3,4,6,7,8-HxCDF	74		28 - 136				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140				02/27/17 08:20	03/01/17 04:14	1
13C-1,2,3,4,6,7,8-HpCDF	67		28 - 143				02/27/17 08:20	03/01/17 04:14	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,4,7,8,9-HpCDF	69		26 - 138	02/27/17 08:20	03/01/17 04:14	1
13C-OCDD	55		17 - 157	02/27/17 08:20	03/01/17 04:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	86		35 - 197	02/27/17 08:20	03/01/17 04:14	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:57	1
Copper	4.3		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:57	1
Lead	2.0		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:57	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:57	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 20:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	56		2.0	0.80	NTU			02/18/17 22:40	20
Total Dissolved Solids	100		10	5.0	mg/L			02/23/17 08:39	1
Total Suspended Solids	50		5.0	2.5	mg/L			02/24/17 11:16	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 18:00	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 19:07	1
Methylene Blue Active Substances	0.077	J,DX	0.10	0.050	mg/L			02/18/17 21:13	1
Biochemical Oxygen Demand	1.9	J,DX	2.0	0.50	mg/L			02/20/17 06:41	1

Client Sample ID: Outfall011_20170218_Comp_F

Lab Sample ID: 440-177399-3

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/23/17 15:59	02/27/17 15:35	1
Copper	3.5	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:35	1
Lead	ND	QP	1.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:35	1
Selenium	ND	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:35	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		03/06/17 17:33	03/06/17 22:23	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			970 mL	2 mL	389492	02/21/17 09:15	BMN	TAL IRV
Total/NA	Analysis	625		1			390358	02/24/17 14:16	DF	TAL IRV
Total/NA	Prep	625			1050 mL	2 mL	390550	02/25/17 09:17	JC1	TAL IRV
Total/NA	Analysis	625		1			390988	02/28/17 16:19	DF	TAL IRV
Total/NA	Prep	608			1055 mL	2 mL	389220	02/21/17 06:54	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			389885	02/23/17 00:27	KS	TAL IRV
Total/NA	Analysis	300.0		1			389085	02/18/17 22:03	NTN	TAL IRV
Total/NA	Analysis	300.0		1			389086	02/18/17 22:03	NTN	TAL IRV
Total/NA	Analysis	314.0		1			389485	02/21/17 16:52	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391869	03/03/17 11:33	TLN	TAL IRV
Total/NA	Prep	1613B			1037.6 mL	20 uL	152230	02/27/17 08:20	DXD	TAL SAC
Total/NA	Analysis	1613B		1			152750	03/01/17 04:14	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:57	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390895	02/27/17 20:12	DB	TAL IRV
Total/NA	Analysis	245.1		1			391252	02/28/17 20:04	DB	TAL IRV
Total/NA	Analysis	180.1		20			389130	02/18/17 22:40	RB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	390386	02/24/17 11:16	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 18:00	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	390502	02/24/17 19:07	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	389129	02/18/17 21:13	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			389203	02/20/17 06:41	XL	TAL IRV

Client Sample ID: Outfall011_20170218_Comp_F

Lab Sample ID: 440-177399-3

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 15:35	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	392310	03/06/17 17:33	DB	TAL IRV
Dissolved	Analysis	245.1		1			392353	03/06/17 22:23	DB	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-389492/1-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389492

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/21/17 09:15	02/24/17 10:41	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/21/17 09:15	02/24/17 10:41	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/21/17 09:15	02/24/17 10:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	72		40 - 120	02/21/17 09:15	02/24/17 10:41	1
2-Fluorobiphenyl	69		50 - 120	02/21/17 09:15	02/24/17 10:41	1
2-Fluorophenol	59		30 - 120	02/21/17 09:15	02/24/17 10:41	1
Nitrobenzene-d5	65		45 - 120	02/21/17 09:15	02/24/17 10:41	1
Phenol-d6	53		35 - 120	02/21/17 09:15	02/24/17 10:41	1
Terphenyl-d14	87		37 - 144	02/21/17 09:15	02/24/17 10:41	1

Lab Sample ID: LCS 440-389492/2-A
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	6.596		ug/L		66	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	7.099		ug/L		71	10 - 150
N-Nitrosodimethylamine	10.0	5.768		ug/L		58	26 - 117
Pentachlorophenol	20.0	10.70		ug/L		53	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	82		40 - 120
2-Fluorobiphenyl	67		50 - 120
2-Fluorophenol	60		30 - 120
Nitrobenzene-d5	67		45 - 120
Phenol-d6	65		35 - 120
Terphenyl-d14	76		37 - 144

Lab Sample ID: 440-177394-J-1-A MS
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389492

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.9	7.659		ug/L		70	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.9	6.790		ug/L		62	10 - 150
N-Nitrosodimethylamine	ND		10.9	7.057		ug/L		65	12 - 123
Pentachlorophenol	ND		21.7	14.78		ug/L		68	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	80		40 - 120
2-Fluorobiphenyl	65		50 - 120
2-Fluorophenol	62		30 - 120
Nitrobenzene-d5	69		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-J-1-A MS
Matrix: Water
Analysis Batch: 390358

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389492

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Phenol-d6	62		35 - 120
Terphenyl-d14	61		37 - 144

Lab Sample ID: MB 440-390550/1-A
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390550

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2,4,6-Tribromophenol	76		40 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorobiphenyl	62		50 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorophenol	58		30 - 120	02/25/17 09:17	02/28/17 11:32	1
Nitrobenzene-d5	60		45 - 120	02/25/17 09:17	02/28/17 11:32	1
Phenol-d6	53		35 - 120	02/25/17 09:17	02/28/17 11:32	1
Terphenyl-d14	84		37 - 144	02/25/17 09:17	02/28/17 11:32	1

Lab Sample ID: LCS 440-390550/2-A
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	10.0	8.366		ug/L		84 10 - 150	
N-Nitrosodimethylamine	10.0	6.704		ug/L		67 26 - 117	
Pentachlorophenol	20.0	15.14		ug/L		76 14 - 150	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	84		40 - 120
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	63		30 - 120
Nitrobenzene-d5	69		45 - 120
Phenol-d6	61		35 - 120
Terphenyl-d14	80		37 - 144

Lab Sample ID: 440-177394-K-1-A MS
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
2,4,6-Trichlorophenol	ND		10.4	7.480		ug/L		72 37 - 144	
Bis(2-ethylhexyl) phthalate	ND		10.4	3.066	J,DX	ug/L		29 10 - 150	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-K-1-A MS
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
N-Nitrosodimethylamine	ND		10.4	6.515		ug/L		63	12 - 123
Pentachlorophenol	ND		20.8	15.07		ug/L		72	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	75		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	59		30 - 120
Nitrobenzene-d5	64		45 - 120
Phenol-d6	60		35 - 120
Terphenyl-d14	30	LG	37 - 144

Lab Sample ID: 440-177394-K-1-B MSD
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
2,4,6-Trichlorophenol	ND		9.76	6.996		ug/L		72	37 - 144	7	30
Bis(2-ethylhexyl) phthalate	ND		9.76	3.659	J,DX	ug/L		38	10 - 150	18	25
N-Nitrosodimethylamine	ND		9.76	6.496		ug/L		67	12 - 123	0	35
Pentachlorophenol	ND		19.5	14.08		ug/L		72	14 - 150	7	25

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2,4,6-Tribromophenol	73		40 - 120
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	57		30 - 120
Nitrobenzene-d5	64		45 - 120
Phenol-d6	60		35 - 120
Terphenyl-d14	36	LG	37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-389220/1-A
Matrix: Water
Analysis Batch: 390125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389220

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/20/17 07:21	02/23/17 17:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	43		10 - 150	02/20/17 07:21	02/23/17 17:11	1
DCB Decachlorobiphenyl (Surr)	59		18 - 134	02/20/17 07:21	02/23/17 17:11	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-389220/5-A
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	0.200	0.131	PI	ug/L		66	37 - 134
Surrogate							
	%Recovery	LCS	Qualifier	Limits			
Tetrachloro-m-xylene	58	PI	10 - 150				
DCB Decachlorobiphenyl (Surr)	75	PI	18 - 134				

Lab Sample ID: 440-177394-H-1-A MSD
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	ND		0.194	0.144		ug/L		74	40 - 120	12	30
Surrogate											
	%Recovery	MSD	Qualifier	Limits							
Tetrachloro-m-xylene	65		10 - 150								
DCB Decachlorobiphenyl (Surr)	91		18 - 134								

Lab Sample ID: 440-177394-I-1-A MS
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
alpha-BHC	ND		0.207	0.163		ug/L		78	40 - 120
Surrogate									
	%Recovery	MS	Qualifier	Limits					
Tetrachloro-m-xylene	72		10 - 150						
DCB Decachlorobiphenyl (Surr)	86		18 - 134						

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389085/4
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/18/17 13:16	1
Nitrite as N	ND		0.15	0.070	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389085/2
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Nitrate as N	1.13	1.09		mg/L		96	90 - 110
Nitrite as N	1.52	1.46		mg/L		96	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-177360-B-13 MS
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.13		1.13	1.27		mg/L		101	80 - 120
Nitrite as N	ND		1.52	1.59		mg/L		105	80 - 120

Lab Sample ID: 440-177360-B-13 MSD
Matrix: Water
Analysis Batch: 389085

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.13		1.13	1.26		mg/L		100	80 - 120	1	20
Nitrite as N	ND		1.52	1.59		mg/L		104	80 - 120	0	20

Lab Sample ID: MB 440-389086/4
Matrix: Water
Analysis Batch: 389086

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/18/17 13:16	1
Sulfate	ND		0.50	0.25	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389086/2
Matrix: Water
Analysis Batch: 389086

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.75		mg/L		95	90 - 110
Sulfate	5.00	5.19		mg/L		104	90 - 110

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-389485/3
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 08:57	1

Lab Sample ID: LCS 440-389485/2
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.5		ug/L		102	85 - 115

Lab Sample ID: MRL 440-389485/5
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.92	J,DX	ug/L		98	75 - 125

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: 440-177165-A-1 MS
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.6		ug/L		110	80 - 120

Lab Sample ID: 440-177165-A-1 MSD
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.7		ug/L		111	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,7,8-TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8-PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDD	ND		0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDD	ND		0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,6,7,8-HxCDF	0.00000140	J,DX	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,7,8,9-HxCDF	0.00000112	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
2,3,4,6,7,8-HxCDF	0.000000796	J,DX q	0.000050	0.0000004	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDD	0.00000372	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,6,7,8-HpCDF	0.00000131	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDD	0.0000108	J,DX	0.00010	0.0000013	ug/L		02/27/17 08:20	02/28/17 23:14	1
OCDF	0.00000612	J,DX	0.00010	0.0000015	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDD	ND		0.000010	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total TCDF	ND		0.000010	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152230/1-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152230

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PeCDD	0.000000537	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total PeCDF	0.00000193	J,DX	0.000050	0.0000007	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDD	0.00000118	J,DX q	0.000050	0.0000006	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HxCDF	0.00000331	J,DX q	0.000050	0.0000005	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDD	0.00000696	J,DX q	0.000050	0.0000009	ug/L		02/27/17 08:20	02/28/17 23:14	1
Total HpCDF	0.00000131	J,DX q	0.000050	0.0000012	ug/L		02/27/17 08:20	02/28/17 23:14	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	52		25 - 164	02/27/17 08:20	02/28/17 23:14	1
13C-2,3,7,8-TCDF	53		24 - 169	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDD	39		25 - 181	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8-PeCDF	45		24 - 185	02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,7,8-PeCDF	49		21 - 178	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDD	58		32 - 141	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDD	54		28 - 130	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,6,7,8-HxCDF	53		26 - 123	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,7,8,9-HxCDF	49		29 - 147	02/27/17 08:20	02/28/17 23:14	1
13C-2,3,4,6,7,8-HxCDF	57		28 - 136	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDD	40		23 - 140	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,6,7,8-HpCDF	48		28 - 143	02/27/17 08:20	02/28/17 23:14	1
13C-1,2,3,4,7,8,9-HpCDF	47		26 - 138	02/27/17 08:20	02/28/17 23:14	1
13C-OCDD	35		17 - 157	02/27/17 08:20	02/28/17 23:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	02/27/17 08:20	02/28/17 23:14	1

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000223		ug/L		111	67 - 158
2,3,7,8-TCDF	0.000200	0.000193		ug/L		97	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00120		ug/L		120	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00113	MB	ug/L		113	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00101		ug/L		101	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100		ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000922		ug/L		92	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000968		ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00104	MB	ug/L		104	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00107	MB	ug/L		107	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-152230/2-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3,4,6,7,8-HpCDD	0.00100	0.00118	MB	ug/L		118	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000993	MB	ug/L		99	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000998		ug/L		100	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	63		22 - 152
13C-1,2,3,7,8-PeCDD	48		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	75		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	70		19 - 202
13C-1,2,3,6,7,8-HxCDF	63		21 - 159
13C-1,2,3,7,8,9-HxCDF	59		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	54		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	66		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	63		20 - 186
13C-OCDD	55		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Lab Sample ID: LCSD 320-152230/3-A
Matrix: Water
Analysis Batch: 152750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152230

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000235		ug/L		117	67 - 158	5	50
2,3,7,8-TCDF	0.000200	0.000211		ug/L		106	75 - 158	9	50
1,2,3,7,8-PeCDD	0.00100	0.00121		ug/L		121	70 - 142	0	50
1,2,3,7,8-PeCDF	0.00100	0.00114	MB	ug/L		114	80 - 134	2	50
2,3,4,7,8-PeCDF	0.00100	0.00103		ug/L		103	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000949		ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00108		ug/L		108	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000959		ug/L		96	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000950		ug/L		95	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.00106	MB	ug/L		106	78 - 130	1	50
2,3,4,6,7,8-HxCDF	0.00100	0.00107	MB	ug/L		107	70 - 156	0	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00116	MB	ug/L		116	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122	9	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939		ug/L		94	78 - 138	6	50
OCDD	0.00200	0.00209	MB	ug/L		104	78 - 144	4	50
OCDF	0.00200	0.00194	MB	ug/L		97	63 - 170	9	50

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	51		20 - 175
13C-2,3,7,8-TCDF	51		22 - 152
13C-1,2,3,7,8-PeCDD	40		21 - 227
13C-1,2,3,7,8-PeCDF	44		21 - 192
13C-2,3,4,7,8-PeCDF	50		13 - 328
13C-1,2,3,4,7,8-HxCDD	62		21 - 193
13C-1,2,3,6,7,8-HxCDD	52		25 - 163
13C-1,2,3,4,7,8-HxCDF	57		19 - 202
13C-1,2,3,6,7,8-HxCDF	53		21 - 159
13C-1,2,3,7,8,9-HxCDF	46		17 - 205
13C-2,3,4,6,7,8-HxCDF	52		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	41		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	47		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	50		20 - 186
13C-OCDD	38		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
 Matrix: Water
 Analysis Batch: 391937

Client Sample ID: Method Blank
 Prep Type: Total Recoverable
 Prep Batch: 391410

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		03/01/17 15:15	03/03/17 14:44	1
Copper	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Lead	ND		1.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1
Selenium	ND		2.0	0.50	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
 Matrix: Water
 Analysis Batch: 391937

Client Sample ID: Lab Control Sample
 Prep Type: Total Recoverable
 Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	Limits
Copper	80.0	75.2		ug/L		94	85 - 115	
Lead	80.0	71.8		ug/L		90	85 - 115	
Selenium	80.0	74.2		ug/L		93	85 - 115	

Lab Sample ID: 440-177394-S-1-E MS
 Matrix: Water
 Analysis Batch: 391937

Client Sample ID: Matrix Spike
 Prep Type: Total Recoverable
 Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec.	Limits
Copper	4.1		80.0	79.8			95	70 - 130		
Lead	1.9		80.0	77.1			94	70 - 130		
Selenium	ND		80.0	72.9			91	70 - 130		

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
Cadmium	ND		80.0	75.1	BA	ug/L		94	70 - 130	200	20	
Copper	4.1		80.0	77.7	BA	ug/L		92	70 - 130	200	20	
Lead	1.9		80.0	75.3	BA	ug/L		92	70 - 130	200	20	
Selenium	ND		80.0	72.2	BA	ug/L		90	70 - 130	200	20	

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB		RL	MDL	Unit	D	Prepared		Analyzed		Dil Fac
	Result	Qualifier					Time	Time	Time	Time	
Cadmium	ND		1.0	0.25	ug/L		02/23/17 15:59	02/27/17 14:41			1
Copper	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41			1
Lead	ND		1.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41			1
Selenium	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41			1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike	LCS		Unit	D	%Rec	%Rec.	
		Result	Qualifier				Limits	RPD
Cadmium	80.0	76.7		ug/L		96	85 - 115	
Copper	80.0	90.7		ug/L		113	85 - 115	
Lead	80.0	78.2		ug/L		98	85 - 115	
Selenium	80.0	78.6		ug/L		98	85 - 115	

Lab Sample ID: 440-177395-A-3-C MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample	Sample	Spike	MS		Unit	D	%Rec	%Rec.	
	Result	Qualifier		Result	Qualifier				Limits	RPD
Cadmium	ND	QP	80.0	75.7		ug/L		95	70 - 130	
Copper	2.9	QP	80.0	78.6		ug/L		95	70 - 130	
Lead	ND	QP	80.0	76.8		ug/L		96	70 - 130	
Selenium	ND	QP	80.0	76.0		ug/L		95	70 - 130	

Lab Sample ID: 440-177395-A-3-D MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample	Sample	Spike	MSD		Unit	D	%Rec	%Rec.		RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits	RPD		
Cadmium	ND	QP	80.0	78.9		ug/L		99	70 - 130	4	20	
Copper	2.9	QP	80.0	79.7		ug/L		96	70 - 130	1	20	
Lead	ND	QP	80.0	79.5		ug/L		99	70 - 130	3	20	
Selenium	ND	QP	80.0	80.3		ug/L		100	70 - 130	6	20	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390895/1-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390895

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 19:10	1

Lab Sample ID: LCS 440-390895/2-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.29		ug/L		104	85 - 115

Lab Sample ID: 440-177985-A-1-B MS
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.01		ug/L		100	70 - 130

Lab Sample ID: 440-177985-A-1-C MSD
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	ND		8.00	8.26		ug/L		103	70 - 130	3	20

Lab Sample ID: MB 440-389636/1-G
Matrix: Water
Analysis Batch: 392353

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 392310

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/06/17 17:33	03/06/17 22:18	1

Lab Sample ID: LCS 440-389636/2-G
Matrix: Water
Analysis Batch: 392353

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 392310

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.20		ug/L		103	85 - 115

Lab Sample ID: 440-177399-3 MS
Matrix: Water
Analysis Batch: 392353

Client Sample ID: Outfall011_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 392310

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	QP	8.00	8.58		ug/L		107	70 - 130

Lab Sample ID: 440-177399-3 MSD
Matrix: Water
Analysis Batch: 392353

Client Sample ID: Outfall011_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 392310

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Mercury	ND	QP	8.00	8.59		ug/L		107	70 - 130	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-389130/5
Matrix: Water
Analysis Batch: 389130

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/18/17 22:40	1

Lab Sample ID: 440-177395-I-1 DU
Matrix: Water
Analysis Batch: 389130

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	50		50.4		NTU		0	20

Lab Sample ID: MB 440-389294/5
Matrix: Water
Analysis Batch: 389294

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/20/17 11:26	1

Lab Sample ID: 440-177394-O-1 DU
Matrix: Water
Analysis Batch: 389294

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	140		143		NTU		0.1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177394-E-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	230		223		mg/L		1	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-390386/1
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/24/17 11:16	1

Lab Sample ID: LCS 440-390386/2
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	953		mg/L		95	85 - 115

Lab Sample ID: 440-177399-1 DU
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Outfall011_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	50		50.0		mg/L		1	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-390502/10
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 17:48	1

Lab Sample ID: LCS 440-390502/11
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.140		mg/L		103	90 - 110

Lab Sample ID: MRL 440-390502/9
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2640		mg/L		132	10 - 200

Lab Sample ID: 440-177923-C-1 MS
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.460		mg/L		109	90 - 110

Lab Sample ID: 440-177923-C-1 MSD
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Ammonia (as N)	ND		5.00	5.240		mg/L		105	90 - 110	4	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-389129/3
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/18/17 21:13	1

Lab Sample ID: LCS 440-389129/4
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.260		mg/L		104	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 720-77778-B-1 MS

Matrix: Water
Analysis Batch: 389129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.062	J,DX	0.250	0.286		mg/L		89	50 - 125

Lab Sample ID: 720-77778-B-1 MSD

Matrix: Water
Analysis Batch: 389129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.062	J,DX	0.250	0.285		mg/L		89	50 - 125	0	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-389203/1

Matrix: Water
Analysis Batch: 389203

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/20/17 06:41	1

Lab Sample ID: LCS 440-389203/4

Matrix: Water
Analysis Batch: 389203

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	191		mg/L		96	85 - 115

Lab Sample ID: LCSD 440-389203/5

Matrix: Water
Analysis Batch: 389203

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	194		mg/L		98	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

GC/MS Semi VOA

Prep Batch: 389492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	625	
MB 440-389492/1-A	Method Blank	Total/NA	Water	625	
LCS 440-389492/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-J-1-A MS	Matrix Spike	Total/NA	Water	625	

Analysis Batch: 390358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	625	389492
MB 440-389492/1-A	Method Blank	Total/NA	Water	625	389492
LCS 440-389492/2-A	Lab Control Sample	Total/NA	Water	625	389492
440-177394-J-1-A MS	Matrix Spike	Total/NA	Water	625	389492

Prep Batch: 390550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	625	
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 390988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	625	390550
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	390550
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	390550
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	390550
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	390550

GC Semi VOA

Prep Batch: 389220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	608	
MB 440-389220/1-A	Method Blank	Total/NA	Water	608	
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608	
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608	

Analysis Batch: 389885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	608 Pesticides	389220
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608 Pesticides	389220
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	389220
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	389220

Analysis Batch: 390125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389220/1-A	Method Blank	Total/NA	Water	608 Pesticides	389220

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

HPLC/IC

Analysis Batch: 389085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	300.0	
MB 440-389085/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389085/2	Lab Control Sample	Total/NA	Water	300.0	
440-177360-B-13 MS	Matrix Spike	Total/NA	Water	300.0	
440-177360-B-13 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 389086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	300.0	
MB 440-389086/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389086/2	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 389485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	314.0	
MB 440-389485/3	Method Blank	Total/NA	Water	314.0	
LCS 440-389485/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-389485/5	Lab Control Sample	Total/NA	Water	314.0	
440-177165-A-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-177165-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 391869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	1613B	
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	1613B	152230
MB 320-152230/1-A	Method Blank	Total/NA	Water	1613B	152230
LCS 320-152230/2-A	Lab Control Sample	Total/NA	Water	1613B	152230
LCSD 320-152230/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152230

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-389636/1-G	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-389636/2-G	Lab Control Sample	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Metals (Continued)

Filtration Batch: 389636 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-177399-3 MS	Outfall011_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177399-3 MSD	Outfall011_20170218_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.2	389636
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	389636

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.8	390172
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390172

Prep Batch: 390895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	245.1	
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 391252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	245.1	390895
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	390895
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	390895
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	390895
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	390895

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Metals (Continued)

Analysis Batch: 391937 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

Prep Batch: 392310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	245.1	389636
MB 440-389636/1-G	Method Blank	Dissolved	Water	245.1	389636
LCS 440-389636/2-G	Lab Control Sample	Dissolved	Water	245.1	389636
440-177399-3 MS	Outfall011_20170218_Comp_F	Dissolved	Water	245.1	389636
440-177399-3 MSD	Outfall011_20170218_Comp_F	Dissolved	Water	245.1	389636

Analysis Batch: 392353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	245.1	392310
MB 440-389636/1-G	Method Blank	Dissolved	Water	245.1	392310
LCS 440-389636/2-G	Lab Control Sample	Dissolved	Water	245.1	392310
440-177399-3 MS	Outfall011_20170218_Comp_F	Dissolved	Water	245.1	392310
440-177399-3 MSD	Outfall011_20170218_Comp_F	Dissolved	Water	245.1	392310

General Chemistry

Analysis Batch: 389129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	SM 5540C	
MB 440-389129/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-389129/4	Lab Control Sample	Total/NA	Water	SM 5540C	
720-77778-B-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
720-77778-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 389130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	180.1	
MB 440-389130/5	Method Blank	Total/NA	Water	180.1	
440-177395-I-1 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	SM5210B	
USB 440-389203/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-389203/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-389203/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 389294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389294/5	Method Blank	Total/NA	Water	180.1	
440-177394-O-1 DU	Duplicate	Total/NA	Water	180.1	

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

General Chemistry (Continued)

Prep Batch: 389329 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177394-E-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 390386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	SM 2540D	
MB 440-390386/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-390386/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177399-1 DU	Outfall011_20170218_Comp	Total/NA	Water	SM 2540D	

Analysis Batch: 390502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-390502/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-390502/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-390502/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LG	LG=Surrogate recovery below the acceptance limits

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
BA	Relative percent difference out of control
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18
The following analytes are included in this report, but certification is not offered by the governing authority:				
Analysis Method	Prep Method	Matrix	Analyte	
608 Pesticides	608	Water	alpha-BHC	
625	625	Water	2,4,6-Trichlorophenol	
625	625	Water	2,4-Dinitrotoluene	
625	625	Water	Bis(2-ethylhexyl) phthalate	
625	625	Water	N-Nitrosodimethylamine	
625	625	Water	Pentachlorophenol	
NO3NO2 Calc		Water	Nitrate Nitrite as N	

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

March 10, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall011_20170218__Comp (440-177399-1)
DATE RECEIVED: 20 Feb - 17
ABC LAB NO.: TAM0217.251

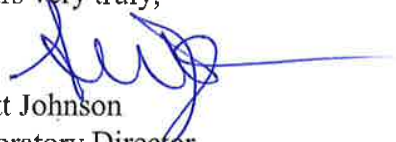
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = FAIL % EFFECT = 27.61 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 09 Mar-17 16:08 (p 1 of 1)
 Test Code: TAM0217.251sel | 11-3503-5754

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-9701-5387	Test Type: Cell Growth	Analyst:
Start Date: 21 Feb-17 16:42	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 13-5075-9990	Code: TAM0217.251s	Client: Test America Irvine
Sample Date: 18 Feb-17 12:55	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report	
Sample Age: 76h (1 °C)	Station: Outfall011_20170218_Comp (440-177399-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
04-9654-0782	Cell Density	TST-Welch's t Test	0.9246	100% failed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
04-9654-0782	Cell Density	Control CV	0.04859	<<	0.2	Yes	Passes Criteria
04-9654-0782	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.342E+6	1.288E+6	1.397E+6	1.234E+6	1.419E+6	2.306E+4	6.523E+4	4.86%	0.00%
100		8	9.718E+5	9.361E+5	1.007E+6	9.010E+5	1.029E+6	1.507E+4	4.262E+4	4.39%	27.61%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.234E+6	1.312E+6	1.267E+6	1.362E+6	1.366E+6	1.380E+6	1.399E+6	1.419E+6
100		9.870E+5	9.010E+5	9.320E+5	1.029E+6	9.960E+5	9.640E+5	9.530E+5	1.012E+6

CETIS Analytical Report

Report Date: 09 Mar-17 16:08 (p 1 of 2)

Test Code: TAM0217.251sel | 11-3503-5754

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 04-9654-0782	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 09 Mar-17 16:08	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes	
Batch ID: 20-9701-5387	Test Type: Cell Growth	Analyst:	
Start Date: 21 Feb-17 16:42	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 95h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 13-5075-9990	Code: TAM0217.251s	Client: Test America Irvine	
Sample Date: 18 Feb-17 12:55	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls	
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report		
Sample Age: 76h (1 °C)	Station: Outfall011_20170218_Comp (440-177399-		

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% failed cell density

TST-Welch's t Test

Control	vs	Conc-%	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100	-1.527	0.6938	13	CDF	0.9246	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04859	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	5.495E+11	5.495E+11	1	181	<1.0E-37	Significant Effect
Error	4.250E+10	3.036E+09	14			
Total	5.92E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	2.043	8.862	0.1749	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6409	8.862	0.4368	Equal Variances
Variances	Variance Ratio F Test	2.342	8.885	0.2839	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.3936	3.878	0.3797	Normal Distribution
Distribution	D'Agostino Skewness Test	1.092	2.576	0.2750	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1752	0.2471	0.2137	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9496	0.8408	0.4830	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.342E+6	1.288E+6	1.397E+6	1.364E+6	1.234E+6	1.419E+6	2.306E+4	4.86%	0.00%
100		8	9.718E+5	9.361E+5	1.007E+6	9.755E+5	9.010E+5	1.029E+6	1.507E+4	4.39%	27.61%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.234E+6	1.312E+6	1.267E+6	1.362E+6	1.366E+6	1.380E+6	1.399E+6	1.419E+6
100		9.870E+5	9.010E+5	9.320E+5	1.029E+6	9.960E+5	9.640E+5	9.530E+5	1.012E+6

Selenastrum Growth Test

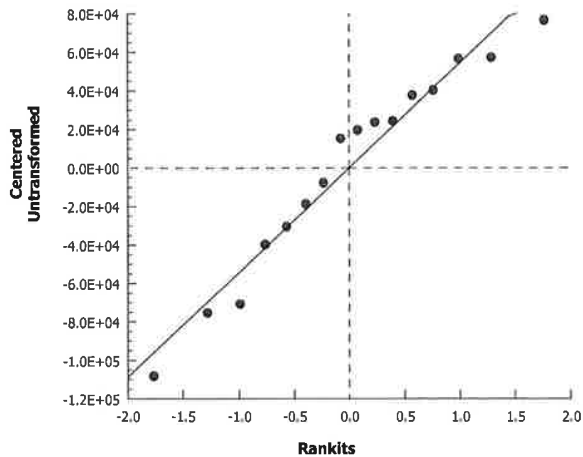
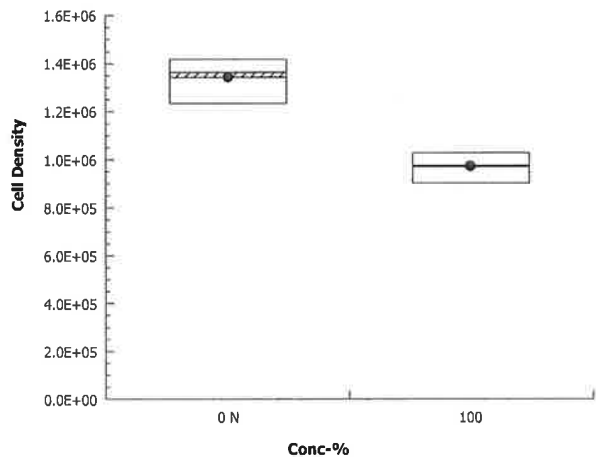
Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 04-9654-0782
Analyzed: 09 Mar-17 16:08

Endpoint: Cell Density
Analysis: Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 09 Mar-17 16:08 (p 1 of 2)
 Test Code: TAM0217.251sel | 11-3503-5754

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 20-9701-5387	Test Type: Cell Growth	Analyst:
Start Date: 21 Feb-17 16:42	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 25 Feb-17 16:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 13-5075-9990	Code: TAM0217.251s	Client: Test America Irvine
Sample Date: 18 Feb-17 12:55	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 20 Feb-17 13:51	Source: Bioassay Report	
Sample Age: 76h (1 °C)	Station: Outfall011_20170218_Comp (440-177399-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	66			66	66	0	0	0.0%	0
100		1	42			42	42	0	0	0.0%	0
Overall		2	54	-98.47	206.5	42	66	12	16.97	31.43%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	427	406.2	447.8	408	444	7.497	16.76	3.93%	0
100		5	192.8	191.8	193.8	192	194	0.3742	0.8367	0.43%	0
Overall		10	309.9	221.2	398.6	192	444	39.19	123.9	39.99%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	98			98	98	0	0	0.0%	0
100		1	76			76	76	0	0	0.0%	0
Overall		2	87	-52.77	226.8	76	98	11	15.56	17.88%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.66	7.518	7.802	7.5	7.8	0.05099	0.114	1.49%	0
100		5	7.58	7.396	7.764	7.4	7.8	0.06633	0.1483	1.96%	0
Overall		10	7.62	7.526	7.714	7.4	7.8	0.04163	0.1317	1.73%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.24	23.93	24.55	24	24.5	0.1122	0.251	1.04%	0
100		5	24.24	23.93	24.55	24	24.5	0.1122	0.251	1.04%	0
Overall		10	24.24	24.07	24.41	24	24.5	0.07483	0.2366	0.98%	0 (0%)

CETIS Measurement Report

Report Date: 09 Mar-17 16:08 (p 2 of 2)
 Test Code: TAM0217.251sel | 11-3503-5754

Selenastrum Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	66
100		42

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	435	438	444	408	410
100		192	192	193	193	194

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	98
100		76

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.6	7.7	7.5	7.7	7.8
100		7.8	7.6	7.6	7.4	7.5

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.2	24	24	24.5	24.5
100		24.2	24	24	24.5	24.5



CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 2 February - 2017

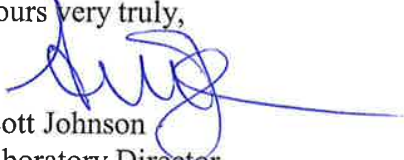
STANDARD TOXICANT: Cadmium Chloride

NOEC = 40.00 ug/l

IC25 = 89.24 ug/l

IC50 = 135.10 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 15 Feb-17 15:17 (p 1 of 1)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:			
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 96h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab			
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
20-4050-2957	Cell Density	Dunnett Multiple Comparison Test	40	80	56.57		8.64%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
12-8217-0386	Cell Density	Linear Interpolation (ICPIN)	IC5	43.15	n/a	57.97		
			IC10	55.46	12.33	72.05		
			IC15	67.77	41.96	87.44		
			IC20	80.06	59.78	93.4		
			IC25	89.24	74.9	101.6		
			IC40	116.8	104.4	129.1		
			IC50	135.1	123.3	146.7		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-8217-0386	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
20-4050-2957	Cell Density	Control CV	0.07165	<<	0.2	Yes	Passes Criteria
12-8217-0386	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
20-4050-2957	Cell Density	Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
20-4050-2957	Cell Density	PMSD	0.08638	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.16%	0.00%
20		4	1.104E+6	9.980E+5	1.213E+6	1.009E+6	1.156E+6	3.408E+4	6.817E+4	6.17%	3.28%
40		4	1.100E+6	9.916E+5	1.207E+6	1.035E+6	1.188E+6	3.390E+4	6.781E+4	6.17%	3.72%
80		4	9.140E+5	8.618E+5	9.662E+5	8.720E+5	9.510E+5	1.641E+4	3.281E+4	3.59%	19.96%
140		4	5.408E+5	4.619E+5	6.196E+5	5.020E+5	6.100E+5	2.479E+4	4.958E+4	9.17%	52.65%
180		4	2.200E+5	1.785E+5	2.615E+5	1.950E+5	2.430E+5	1.303E+4	2.606E+4	11.85%	80.74%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 20-4050-2957	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 14 Feb-17 7:57	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:			
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 96h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab			
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	40	80	56.57		8.64%

Control	vs	Conc-ug/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	0.9151	2.407	98650	6	CDF	0.4598	Non-Significant Effect
		40	1.037	2.407	98650	6	CDF	0.4056	Non-Significant Effect
		80*	5.564	2.407	98650	6	CDF	9.0E-05	Significant Effect
		140*	14.67	2.407	98650	6	CDF	2.7E-05	Significant Effect
		180*	22.5	2.407	98650	6	CDF	2.7E-05	Significant Effect

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.08638	0.091	0.29	Yes	Below Criteria

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.831E+12	5.663E+11	5	168.6	<1.0E-37	Significant Effect
Error	6.046E+10	3.359E+09	18			
Total	2.892E+12		23			

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	4.568	15.09	0.4709	Equal Variances
Variances	Levene Equality of Variance Test	1.407	4.248	0.2686	Equal Variances
Variances	Mod Levene Equality of Variance Test	1.086	4.248	0.4011	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.1795	3.878	0.9730	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.2901	2.576	0.7717	Normal Distribution
Distribution	D'Agostino Skewness Test	0.4985	2.576	0.6181	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	0.3327	9.21	0.8468	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.08134	0.2056	1.0000	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9787	0.884	0.8706	Normal Distribution

Conc-ug/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.142E+6	1.012E+6	1.272E+6	1.156E+6	1.037E+6	1.219E+6	4.091E+4	7.16%	0.00%
20		4	1.104E+6	9.960E+5	1.213E+6	1.126E+6	1.009E+6	1.156E+6	3.408E+4	6.17%	3.28%
40		4	1.100E+6	9.916E+5	1.207E+6	1.088E+6	1.035E+6	1.188E+6	3.390E+4	6.17%	3.72%
80		4	9.140E+5	8.618E+5	9.662E+5	9.165E+5	8.720E+5	9.510E+5	1.641E+4	3.59%	19.96%
140		4	5.408E+5	4.619E+5	6.196E+5	5.255E+5	5.020E+5	6.100E+5	2.479E+4	9.17%	52.65%
180		4	2.200E+5	1.785E+5	2.615E+5	2.210E+5	1.950E+5	2.430E+5	1.303E+4	11.85%	80.74%

CETIS Analytical Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 12-8217-0386	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 14 Feb-17 7:57	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes	
Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:	
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 96h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab	
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:	
Receipt Date:	Source: Reference Toxicant		
Sample Age: n/a	Station: REF TOX		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	0	280	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.07165	<<	0.2	Yes	Passes Criteria
Control Resp	1.14E+6	1000000	>>	Yes	Passes Criteria

Point Estimates

Level	µg/L	95% LCL	95% UCL
IC5	43.15	n/a	57.97
IC10	55.46	12.33	72.05
IC15	67.77	41.96	87.44
IC20	80.06	59.78	93.4
IC25	89.24	74.9	101.6
IC40	116.8	104.4	129.1
IC50	135.1	123.3	146.7

Cell Density Summary

Conc-µg/L	Code	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.142E+6	1.037E+6	1.219E+6	4.091E+4	8.182E+4	7.17%	0.0%
20		4	1.104E+6	1.009E+6	1.156E+6	3.408E+4	6.817E+4	6.17%	3.28%
40		4	1.100E+6	1.035E+6	1.188E+6	3.390E+4	6.781E+4	6.17%	3.72%
80		4	9.140E+5	8.720E+5	9.510E+5	1.641E+4	3.281E+4	3.59%	19.96%
140		4	5.408E+5	5.020E+5	6.100E+5	2.479E+4	4.958E+4	9.17%	52.65%
180		4	2.200E+5	1.950E+5	2.430E+5	1.303E+4	2.606E+4	11.85%	80.74%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.037E+6	1.119E+6	1.193E+6	1.219E+6
20		1.102E+6	1.009E+6	1.156E+6	1.151E+6
40		1.035E+6	1.060E+6	1.188E+6	1.115E+6
80		9.100E+5	8.720E+5	9.230E+5	9.510E+5
140		5.020E+5	5.080E+5	6.100E+5	5.430E+5
180		2.430E+5	2.420E+5	2.000E+5	1.950E+5

CETIS Measurement Report

Report Date: 15 Feb-17 15:17 (p 1 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 00-3510-0994	Test Type: Cell Growth	Analyst:
Start Date: 02 Feb-17 13:08	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 06 Feb-17 13:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 96h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 14-2990-8990	Code: SEL020217s	Client: Internal Lab
Sample Date: 02 Feb-17 13:08	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
20		1	59			59	59	0	0	0.0%	0
40		1	51			51	51	0	0	0.0%	0
80		1	54			54	54	0	0	0.0%	0
140		1	58			58	58	0	0	0.0%	0
180		1	50			50	50	0	0	0.0%	0
Overall		6	56.67	49.72	63.62	50	68	2.704	6.623	11.69%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	444.6	432.8	456.4	434	460	4.238	9.476	2.13%	0
20		5	418.2	409.1	427.3	409	429	3.277	7.328	1.75%	0
40		5	413.4	409.1	417.7	410	418	1.536	3.435	0.83%	0
80		5	405.2	400.8	409.6	402	410	1.594	3.564	0.88%	0
140		5	383.8	379.2	388.4	379	388	1.655	3.701	0.96%	0
180		5	366.8	363.4	370.2	364	370	1.241	2.775	0.76%	0
Overall		30	405.3	395.7	415	364	460	4.718	25.84	6.38%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	88			88	88	0	0	0.0%	0
20		1	92			92	92	0	0	0.0%	0
40		1	93			93	93	0	0	0.0%	0
80		1	94			94	94	0	0	0.0%	0
140		1	95			95	95	0	0	0.0%	0
180		1	97			97	97	0	0	0.0%	0
Overall		6	93.17	89.95	96.38	88	97	1.249	3.061	3.29%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.82	7.616	8.024	7.6	8	0.07348	0.1643	2.1%	0
20		5	7.82	7.764	7.876	7.8	7.9	0.02	0.04473	0.57%	0
40		5	7.8	7.799	7.801	7.8	7.8	0	0	0.0%	0
80		5	7.78	7.724	7.836	7.7	7.8	0.02001	0.04473	0.58%	0
140		5	7.74	7.672	7.808	7.7	7.8	0.0245	0.05478	0.71%	0
180		5	7.74	7.672	7.808	7.7	7.8	0.0245	0.05478	0.71%	0
Overall		30	7.783	7.754	7.813	7.6	8	0.01445	0.07915	1.02%	0 (0%)

CETIS Measurement Report

Report Date: 15 Feb-17 15:17 (p 2 of 2)
 Test Code: SEL020217 | 15-7507-1914

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
20		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
40		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
80		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
140		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
180		5	24.1	24.01	24.19	24	24.2	0.03156	0.07056	0.29%	0
Overall		30	24.1	24.08	24.12	24	24.2	0.01174	0.06433	0.27%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	68
20		59
40		51
80		54
140		58
180		50

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	434	442	444	443	460
20		409	415	418	420	429
40		414	410	410	415	418
80		402	403	403	408	410
140		379	381	385	388	386
180		364	364	367	369	370

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	88
20		92
40		93
80		94
140		95
180		97

pH-Units

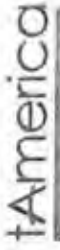
Conc-µg/L	Code	1	2	3	4	5
0	N	8	7.7	7.9	7.9	7.6
20		7.9	7.8	7.8	7.8	7.8
40		7.8	7.8	7.8	7.8	7.8
80		7.8	7.7	7.8	7.8	7.8
140		7.8	7.7	7.7	7.7	7.8
180		7.8	7.7	7.7	7.7	7.8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24	24.1	24.1	24.1	24.2
20		24	24.1	24.1	24.1	24.2
40		24	24.1	24.1	24.1	24.2
80		24	24.1	24.1	24.1	24.2
140		24	24.1	24.1	24.1	24.2
180		24	24.1	24.1	24.1	24.2



Chain of Custody Record



Client Information (Sub Contract Lab)
 Client Contact: Patel, Urvasi
 Shipping/Receiving: urvasi.patel@testamericainc.com
 Company: TestAmerica Laboratories, Inc.
 Address: 13715 Rider Trail North,
 City: MD, 63045
 State, Zip: 314-298-8566(Tel) 314-298-8757(Fax)
 Phone: 44009879
 314-298-8566(Tel) 314-298-8757(Fax)
 Email: SSDWW

Sample Information
 Sample: Outfall011_20170218_Comp (440-177399-1)
 Lab PM: Patel, Urvasi
 Phone: urvasi.patel@testamericainc.com
 E-Mail: urvasi.patel@testamericainc.com
 State Program - California
 Accreditations Required (See note)
 Due Date Requested: 3/2/2017
 TAT Requested (days):
 PO #:
 WO #:
 Project #:
 44009879
 SSDDWW

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Seawater, Groundwater, etc.)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of Containers	Special Instructions/Note:
Outfall011_20170218_Comp (440-177399-1)	2/18/17	12:55 Pacific		Water		X	X	500/Evaporation Gross Alpha/Beta 501.1/CFR161_Geo_K-40 and Cesium-137 503/PreSep_21 Radium-226 504/PreSep_0 Radium-226 505/PreSep_7 Strontium-90 908/PLSC_Dist_Susp Tritium A01R_U/EtChrom_Actin Total Uranium	2	Boeing SSFL; DO NOT FILTER; use prep date from preservation

Analysis Requested
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2O4S
 Q - Nitric Acid
 R - Na2SO3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4-5
 Z - other (specify)
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Amchlor
 H - Ascorbic Acid
 I - ICP
 J - DI Water
 K - EDTA
 L - EDA
 Other:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____ Date: _____ Method of Shipment: _____
 Relinquished by: Vu Banda Date/Time: 2/20/17 17:00 Company: TAI
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Custody Seals Intact: Yes Custody Seal No: _____
 Cooler Temperature(s) °C and Other Remarks:



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177399-1

Login Number: 177399

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177399-1

Login Number: 177399

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/23/17 01:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-177399-1	Outfall011_20170218_Comp	69	68	57	61	68	84	78	82
MB 320-152230/1-A	Method Blank	52	53	39	45	49	58	54	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)
440-177399-1	Outfall011_20170218_Comp	73	65	74	62	67	69	55
MB 320-152230/1-A	Method Blank	53	49	57	40	48	47	35

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152230/2-A	Lab Control Sample	62	63	48	53	59	75	71	70
LCSD 320-152230/3-A	Lab Control Sample Dup	51	51	40	44	50	62	52	57

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152230/2-A	Lab Control Sample	63	59	66	54	66	63	55
LCSD 320-152230/3-A	Lab Control Sample Dup	53	46	52	41	47	50	38

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

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Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-1

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
OCDD = 13C-OCDD

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THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177399-2

Client Project/Site: Routine Outfall 011 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 9:57:45 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 9:57:45 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177399-1	Outfall011_20170218_Comp	Water	02/18/17 12:55	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Job ID: 440-177399-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177399-2**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 3.5° C and 4.6° C.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall011_20170218_Comp (440-177399-1)

Method(s) PrecSep_0: Radium 228; Prep Batch 294407

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294407. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-21: Radium 226; Prep Batch 294401

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294401. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

The following sample was prepped at a reduced aliquot due to sediment.

Outfall011_20170218_Comp (440-177399-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.66		1.04	1.08	3.00	1.09	pCi/L	03/16/17 09:14	03/19/17 20:28	1
Gross Beta	3.98		0.829	0.919	4.00	0.885	pCi/L	03/16/17 09:14	03/19/17 20:28	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-5.04	U	11.4	11.4	20.0	19.4	pCi/L	02/23/17 14:59	02/24/17 15:12	1
Potassium-40	-61.0	U	189	189		242	pCi/L	02/23/17 14:59	02/24/17 15:12	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.282		0.129	0.132	1.00	0.130	pCi/L	02/24/17 10:49	03/20/17 20:29	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	62.2		40 - 110					02/24/17 10:49	03/20/17 20:29	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.109	U	0.343	0.343	1.00	0.594	pCi/L	02/24/17 11:31	03/11/17 14:44	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ba Carrier</i>	62.2		40 - 110					02/24/17 11:31	03/11/17 14:44	1
<i>Y Carrier</i>	85.6		40 - 110					02/24/17 11:31	03/11/17 14:44	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.616		0.371	0.374	3.00	0.560	pCi/L	03/03/17 14:30	03/13/17 10:33	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	81.0		40 - 110					03/03/17 14:30	03/13/17 10:33	1
<i>Y Carrier</i>	95.0		40 - 110					03/03/17 14:30	03/13/17 10:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-37.4	U	159	159	500	294	pCi/L	03/17/17 10:22	03/17/17 19:49	1

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Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.165	U	0.166	0.167	1.00	0.205	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.7		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/16/17 09:14	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:28	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294377	02/24/17 15:12	KLS	TAL SL
Total/NA	Prep	PrecSep-21			999.94 mL	1.0 g	294401	02/24/17 10:49	PJM	TAL SL
Total/NA	Analysis	903.0		1			298257	03/20/17 20:29	MLK	TAL SL
Total/NA	Prep	PrecSep_0			999.94 mL	1.0 g	294407	02/24/17 11:31	PJM	TAL SL
Total/NA	Analysis	904.0		1			297297	03/11/17 14:44	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.41 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:33	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 19:49	ALD	TAL SL
Total/NA	Prep	ExtChrom			499.79 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298116	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294401/1-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294401

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1011		0.0693	0.0699	1.00	0.0920	pCi/L	02/24/17 10:49	03/20/17 20:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					02/24/17 10:49	03/20/17 20:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294401/2-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.72		1.12	1.00	0.112	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	89.7		40 - 110							

Lab Sample ID: LCSD 160-294401/3-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	11.08		1.15	1.00	0.0841	pCi/L	98	68 - 137	0.16	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294407/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294407

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03249	U	0.238	0.238	1.00	0.431	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	86.7		40 - 110							
Y Carrier	83.7		40 - 110							
								Prepared	Analyzed	Dil Fac
								02/24/17 11:31	03/11/17 14:43	1
								02/24/17 11:31	03/11/17 14:43	1

Lab Sample ID: LCS 160-294407/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	13.59		1.49	1.00	0.394	pCi/L	99	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	89.7		40 - 110						
Y Carrier	86.4		40 - 110						

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-294407/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.7	13.97		1.51	1.00	0.370	pCi/L	102	56 - 140	0.13	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								
Y Carrier	87.5		40 - 110								

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1
Carrier	%Yield	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac		
Sr Carrier	77.8		40 - 110			03/03/17 14:30	03/13/17 10:31	1		
Y Carrier	97.2		40 - 110			03/03/17 14:30	03/13/17 10:31	1		

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150
Carrier	%Yield	MS Qualifier	Limits								
Sr Carrier	80.3		40 - 110								
Y Carrier	104		40 - 110								

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	MB MB		Limits			Prepared	Analyzed	Dil Fac		
%Yield	Qualifier									
Uranium-232	73.2		30 - 110			03/09/17 12:44	03/16/17 23:27	1		

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
%Yield	Qualifier								
Uranium-232	89.4		30 - 110						

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143
Tracer	MS MS		Limits			Prepared	Analyzed	Dil Fac			
%Yield	Qualifier										
Uranium-232	63.1		30 - 110								

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1
Tracer	MSD MSD		Limits			Prepared	Analyzed	Dil Fac					
%Yield	Qualifier												
Uranium-232	81.8		30 - 110										

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-G MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	74.3		30 - 110								

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	89.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Rad

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 294401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294401/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294401/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-294401/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 294407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294407/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294407/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-294407/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Rad (Continued)

Prep Batch: 298177 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177399-2

Login Number: 177399

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177399-2

Login Number: 177399

List Number: 2

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/22/17 01:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-177399-1	Outfall011_20170218_Comp	62.2
LCS 160-294401/2-A	Lab Control Sample	89.7
LCSD 160-294401/3-A	Lab Control Sample Dup	90.9
MB 160-294401/1-A	Method Blank	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-177399-1	Outfall011_20170218_Comp	62.2	85.6
LCS 160-294407/2-A	Lab Control Sample	89.7	86.4
LCSD 160-294407/3-A	Lab Control Sample Dup	90.9	87.5
MB 160-294407/1-A	Method Blank	86.7	83.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-177394-A-1-I MS	Matrix Spike	80.3	104
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2
440-177399-1	Outfall011_20170218_Comp	81.0	95.0
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177394-A-1-L MS	Matrix Spike	63.1
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8
440-177399-1	Outfall011_20170218_Comp	81.7
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177399-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 14, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177399-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall011_20170218_ Comp	440-177399-1	N/A	Water	2/18/17 12:55 PM	E200.8
Outfall011_20170218_ Comp_F	440-177399-3	N/A	Water	2/18/17 12:55 PM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177399-4:

- The laboratory received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklist, custody seals were intact on the coolers.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 200.8— ZINC

Michael Cherny of MEC^X reviewed the SDG on April 14, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, six months for metals, was met with the following exception. Sample Outfall011_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis five days after receipt. Dissolved zinc in the sample was qualified as an estimated (J).

III.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values were ≥ 0.995 , y -intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for zinc were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for the CRQL associated with analysis of total zinc; this review is based on summary data for that CRQL.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with total zinc; this review is based on summary data for those blanks.

III.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA analysis associated with total zinc; this review is based on summary data only for this ICSA analysis.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

III.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.



III.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

III.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773994

Analysis Method E200.8

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	26	20	10	ug/L			

Sample Name Outfall011_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	23	20	10	ug/L	QP	J	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177399-4

Client Project/Site: Routine Outfall 011 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 5:35:00 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 5:35:00 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177399-1	Outfall011_20170218_Comp	Water	02/18/17 12:55	02/18/17 18:40
440-177399-3	Outfall011_20170218_Comp_F	Water	02/18/17 12:55	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Job ID: 440-177399-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177399-4**

Comments

200.7 metals analyzed with 200.8 method with 200.7 RL.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.7° C, 3.5° C and 4.6° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	26		20	10	ug/L		03/01/17 15:15	03/03/17 14:57	1

Client Sample ID: Outfall011_20170218_Comp_F

Lab Sample ID: 440-177399-3

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	23	QP	20	10	ug/L		02/23/17 15:59	02/27/17 15:35	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Client Sample ID: Outfall011_20170218_Comp

Lab Sample ID: 440-177399-1

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	391410	03/01/17 15:15	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			391937	03/03/17 14:57	IH1	TAL IRV

Client Sample ID: Outfall011_20170218_Comp_F

Lab Sample ID: 440-177399-3

Date Collected: 02/18/17 12:55

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 15:35	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-391410/1-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/01/17 15:15	03/03/17 14:44	1

Lab Sample ID: LCS 440-391410/2-A
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	74.6		ug/L		93	85 - 115

Lab Sample ID: 440-177394-S-1-E MS
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	14	J,DX	80.0	89.7		ug/L		95	70 - 130

Lab Sample ID: 440-177394-S-1-F MSD
Matrix: Water
Analysis Batch: 391937

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 391410

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	14	J,DX	80.0	89.3		ug/L		94	70 - 130	0	20

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/23/17 15:59	02/27/17 14:41	1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	76.8		ug/L		96	85 - 115

Lab Sample ID: 440-177395-A-3-C MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	ND	QP	80.0	81.7		ug/L		102	70 - 130

Lab Sample ID: 440-177395-A-3-D MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	ND	QP	80.0	85.0		ug/L		106	70 - 130	4	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

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QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.2	389636
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	389636

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-3	Outfall011_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177395-A-3-C MS	Matrix Spike	Dissolved	Water	200.8	390172
440-177395-A-3-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	390172

Prep Batch: 391410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 391937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177399-1	Outfall011_20170218_Comp	Total Recoverable	Water	200.8	391410
MB 440-391410/1-A	Method Blank	Total Recoverable	Water	200.8	391410
LCS 440-391410/2-A	Lab Control Sample	Total Recoverable	Water	200.8	391410
440-177394-S-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	391410
440-177394-S-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	391410

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 011 Comp

TestAmerica Job ID: 440-177399-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

1

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177399-4

Login Number: 177399

List Source: TestAmerica Irvine

List Number: 1

Creator: Avila, Stephanie 1

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174238-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174238-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170121_Grab	440-174238-1	N/A	Water	1/22/2017 9:00:00 AM	E120.1, E1664, E624, SM2540F, SM9221F, SW8015D/V, SAM348-357



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174238-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.

The following issue was noted:

- The COC indicated a collection date of 1/21/2017, with no time of collection listed. The sample labels indicated a collection date of 1/22/2014, with time of collection of 09:00. The samples were logged per the sample labels.
- Analysis for Human Bacteroidetes was subcontracted to Source Molecular.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 8015B— PURGEABLE AND EXTRACTABLE TOTAL PETROLEUM HYDROCARBONS (TPHs)

L. Calvin of MEC^x reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Total Fuel Hydrocarbons (DVP-8, Rev. 0)*, EPA Method 8015B, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The preserved water sample was analyzed within 14 days for purgeable TPH (GRO), and the water sample was extracted within seven days of collection and analyzed within 40 days of extraction for extractable TPH (DRO).

III.2. CALIBRATION

Initial calibration %RSDs were within the method control limit of $\leq 20\%$, and the ICV and CCV %Ds were within $\leq 15\%$.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits for GRO and DRO of 80-120% and 45-120%, respectively.

III.3.3. SURROGATE RECOVERY

Recoveries were within laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall018_20170121_Grab, for both GRO and DRO. Recoveries and RPDs were within the laboratory control limits.

III.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory reported two total petroleum hydrocarbon ranges: C₄-C₁₂ (GRO), and C₁₃-C₂₈ (DRO). Review indicated no issues with target compound range identification.



III.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified. Review of the raw data did not indicate calculation or transcription errors. The detect for DRO between the MDL and the RL was qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the reporting limit.

IV. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^x reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

IV.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection, and the unpreserved aliquot provided for analysis of acrolein, acrylonitrile and 2-chloroethyl vinyl ether was analyzed within seven days of collection.

IV.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The samples were analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

Target compounds were not detected in the method blanks.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

IV.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the site sample from this SDG, Outfall018_20170121_Grab, for all target compounds. Recoveries and RPDs were within the laboratory control limits.

IV.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.



IV.4.1. TRIP BLANKS

Sample TB-20170121 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

IV.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

The internal standard (IS) retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for IS areas.

IV.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

IV.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

IV.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

IV.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

V. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 23 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F and 9221F*, SAM348-357 (Human Bacteroides by Quantitative PCR), *EPA methods 1664A and 120.1*, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

V.1. HOLDING TIMES

With the exception of the human bacteroides 24-48 hour from collection, the remaining analytical holding times as listed below were met. The nondetect result for human bacteroides was qualified as an estimated nondetect (UJ).

- 7 days for settleable solids
- 28 days for HEM; oil and grease



- 8 hours for *E. coli*
- 28 days for specific conductance

V.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing, and biological controls were acceptable. No instrument calibration information was provided for specific conductance analysis.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The method blanks had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to the biological method or settleable solids. The biological method negative control sample was acceptable. According to the laboratory narrative, negative controls were acceptable for Method SAM348-357.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria. According to the laboratory narrative, positive controls were acceptable for Method SAM348-357.

V.3.3 LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM, settleable solids and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis; no sample results were qualified.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.5.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401742381

Analysis Method E120.1

Sample Name Outfall018_20170121_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174238-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	380	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall018_20170121_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174238-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	4.8	1.4	mg/L	U	U	

Analysis Method E624

Sample Name Outfall018_20170121_Grab Matrix Type: WM Result Type: TRG

Sample Date: 1/21/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-174238-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1,1-Trichloroethane	N	71-55-6	ND	0.50	0.25	ug/L	U	U	
1,1,2,2-Tetrachloroethane	N	79-34-5	ND	0.50	0.25	ug/L	U	U	
1,1,2-Trichloroethane	N	79-00-5	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethane	N	75-34-3	ND	0.50	0.25	ug/L	U	U	
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloropropane	N	78-87-5	ND	0.50	0.25	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.50	0.25	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.50	0.25	ug/L	U	U	
2-Chloroethyl vinyl ether	N	110-75-8	ND	2.0	1.0	ug/L	U	U	
Acrolein	N	107-02-8	ND	5.0	2.5	ug/L	U	U	
Acrylonitrile	N	107-13-1	ND	2.0	1.0	ug/L	U	U	
Benzene	N	71-43-2	ND	0.50	0.25	ug/L	U	U	
Bromodichloromethane	N	75-27-4	ND	0.50	0.25	ug/L	U	U	
Bromoform	N	75-25-2	ND	1.0	0.40	ug/L	U	U	
Bromomethane (Methyl Bromide)	N	74-83-9	ND	0.50	0.25	ug/L	U	U	
Carbon tetrachloride	N	56-23-5	ND	0.50	0.25	ug/L	U	U	

Analysis Method E624

Chlorobenzene	N	108-90-7	ND	0.50	0.25	ug/L	U	U
Chloroethane	N	75-00-3	ND	1.0	0.40	ug/L	U	U
Chloroform (Trichloromethane)	N	67-66-3	ND	0.50	0.25	ug/L	U	U
Chloromethane (Methyl Chloride)	N	74-87-3	ND	0.50	0.25	ug/L	U	U
cis-1,2-Dichloroethene	N	156-59-2	ND	0.50	0.25	ug/L	U	U
cis-1,3-Dichloropropene	N	10061-01-5	ND	0.50	0.25	ug/L	U	U
Dibromochloromethane	N	124-48-1	ND	0.50	0.25	ug/L	U	U
Ethylbenzene	N	100-41-4	ND	0.50	0.25	ug/L	U	U
Methylene chloride	N	75-09-2	ND	2.0	0.88	ug/L	U	U
Naphthalene	N	91-20-3	ND	1.0	0.40	ug/L	U	U
Tetrachloroethene	N	127-18-4	ND	0.50	0.25	ug/L	U	U
Toluene	N	108-88-3	ND	0.50	0.25	ug/L	U	U
trans-1,2-Dichloroethene	N	156-60-5	ND	0.50	0.25	ug/L	U	U
trans-1,3-Dichloropropene	N	10061-02-6	ND	0.50	0.25	ug/L	U	U
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U
Trichlorofluoromethane (CFC-11)	N	75-69-4	ND	0.50	0.25	ug/L	U	U
Trifluorotrichloroethane (Freon 113)	N	76-13-1	ND	2.0	0.50	ug/L	U	U
Vinyl chloride	N	75-01-4	ND	0.50	0.25	ug/L	U	U
Xylene (total)	N	1330-20-7	ND	1.0	0.50	ug/L	U	U

Analysis Method SAM348-357

Sample Name	Outfall018_20170121_Grab		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/21/2017 9:00:00 AM		Validation Level:	8					
Lab Sample Name:	440-174238-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Human Bacteroides	N	HumanBact	ND			CEs/100	U	UJ	H

Analysis Method SM2540F

Sample Name	Outfall018_20170121_Grab		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	1/21/2017 9:00:00 AM		Validation Level:	8					
Lab Sample Name:	440-174238-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

Analysis Method SM9221F**Sample Name** Outfall018_20170121_Grab **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174238-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	600	1.8	1.8	mpn/100			

Analysis Method SW8015D**Sample Name** Outfall018_20170121_Grab **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174238-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Petroleum Hydrocarbons (C13- C28)(DRO)	N	PHC1328	0.10	0.48	0.096	mg/L	J,DX	J	DNQ

Analysis Method SW8015V**Sample Name** Outfall018_20170121_Grab **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/21/2017 9:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174238-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
PHC as Unknown/Waste Product, Light Range C4-C12	N	PHCML	ND	0.050	0.025	mg/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174238-1

Client Project/Site: Annual Outfall 018 Grab

Revision: 1

For:

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400 E Van Buren St.

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Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/27/2017 8:42:21 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/27/2017 8:42:21 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174238-1	Outfall018_20170121_Grab	Water	01/22/17 09:00	01/22/17 14:04
440-174238-3	TB-20170121	Water	01/22/17 09:00	01/22/17 14:04

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Job ID: 440-174238-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174238-1

Comments

Report revised to include additional analytes for 624.

Per Katherine Miller, the sample ID, date and time on the COC were updated to match the sample labels

Receipt

The samples were received on 1/22/2017 2:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.6° C and 1.2° C.

Receipt Exceptions

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC):
Outfall018_20170121_Grab (440-174238-1), Outfall018_20170121_Grab (440-174238-1[MS]), Outfall018_20170121_Grab (440-174238-1[MSD]), Outfall018_20170121_Grab_Extra (440-174238-2) and TB-20170121 (440-174238-3).
Sampling date on the COC: 1/21/17, no sampling time
Sampling date on the bottles: 1/22/17 @ 0900
Logged project following the information from the containers.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

Method Source Molecular-Human Bacteroidales: This method was subcontracted to TestAmerica Irvine. The subcontract laboratory certification is different from that of the facility issuing the final report.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-386004 and analytical batch 440-386405. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this job.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Client Sample ID: Outfall018_20170121_Grab

Lab Sample ID: 440-174238-1

Date Collected: 01/22/17 09:00

Matrix: Water

Date Received: 01/22/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 20:39	1
1,1,1,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 20:39	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 20:39	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Benzene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Bromoform	ND		1.0	0.40	ug/L			01/26/17 12:15	1
Bromomethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Chloroethane	ND		1.0	0.40	ug/L			01/26/17 12:15	1
Chloroform	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Chloromethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/26/17 12:15	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Toluene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Trichloroethene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/26/17 12:15	1
Naphthalene	ND		1.0	0.40	ug/L			01/26/17 12:15	1
o-Xylene	ND		0.50	0.25	ug/L			01/26/17 12:15	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/26/17 12:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/26/17 12:15	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 12:15	1
Cyclohexane	ND		2.0	1.0	ug/L			01/26/17 12:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 128		01/23/17 20:39	1
Dibromofluoromethane (Surr)	100		76 - 132		01/23/17 20:39	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/23/17 20:39	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/26/17 12:15	1
Dibromofluoromethane (Surr)	107		76 - 132		01/26/17 12:15	1
Toluene-d8 (Surr)	103		80 - 128		01/26/17 12:15	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Client Sample ID: Outfall018_20170121_Grab

Lab Sample ID: 440-174238-1

Date Collected: 01/22/17 09:00

Matrix: Water

Date Received: 01/22/17 14:04

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/30/17 12:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		65 - 140					01/30/17 12:14	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	0.10	J,DX	0.48	0.096	mg/L		01/26/17 07:43	01/27/17 18:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	66		45 - 120				01/26/17 07:43	01/27/17 18:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		4.8	1.4	mg/L		02/02/17 08:54	02/03/17 14:29	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	380		1.0	1.0	umhos/cm			01/26/17 08:22	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			01/23/17 16:11	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	600		1.8	1.8	MPN/100mL			01/22/17 15:07	1

Client Sample ID: TB-20170121

Lab Sample ID: 440-174238-3

Date Collected: 01/22/17 09:00

Matrix: Water

Date Received: 01/22/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 23:47	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 23:47	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 23:47	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Benzene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Bromoform	ND		1.0	0.40	ug/L			01/26/17 10:16	1
Bromomethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Chloroethane	ND		1.0	0.40	ug/L			01/26/17 10:16	1
Chloroform	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Chloromethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Client Sample ID: TB-20170121

Lab Sample ID: 440-174238-3

Date Collected: 01/22/17 09:00

Matrix: Water

Date Received: 01/22/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/26/17 10:16	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Toluene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Trichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/26/17 10:16	1
Naphthalene	ND		1.0	0.40	ug/L			01/26/17 10:16	1
o-Xylene	ND		0.50	0.25	ug/L			01/26/17 10:16	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/26/17 10:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/26/17 10:16	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 10:16	1
Cyclohexane	ND		2.0	1.0	ug/L			01/26/17 10:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	109		80 - 128		01/23/17 23:47	1
<i>Dibromofluoromethane (Surr)</i>	103		76 - 132		01/23/17 23:47	1
<i>4-Bromofluorobenzene (Surr)</i>	98		80 - 120		01/23/17 23:47	1
<i>4-Bromofluorobenzene (Surr)</i>	99		80 - 120		01/26/17 10:16	1
<i>Dibromofluoromethane (Surr)</i>	105		76 - 132		01/26/17 10:16	1
<i>Toluene-d8 (Surr)</i>	104		80 - 128		01/26/17 10:16	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Client Sample ID: Outfall018_20170121_Grab

Lab Sample ID: 440-174238-1

Date Collected: 01/22/17 09:00

Matrix: Water

Date Received: 01/22/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	384504	01/26/17 12:15	HR	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	383885	01/23/17 20:39	WK	TAL IRV
Total/NA	Analysis	8015B		1	10 mL	10 mL	385124	01/30/17 12:14	IM	TAL IRV
Total/NA	Prep	3510C			1045 mL	1 mL	384522	01/26/17 07:43	L2A	TAL IRV
Total/NA	Analysis	8015B		1			384637	01/27/17 18:15	LMB	TAL IRV
Total/NA	Analysis	120.1		1			384519	01/26/17 08:22	XL	TAL IRV
Total/NA	Prep	1664A			1035 mL	1000 mL	386004	02/02/17 08:54	L2A	TAL IRV
Total/NA	Analysis	1664A		1			386405	02/03/17 14:29	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	383898	01/23/17 16:11	ST	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384605		ZEM	TAL IRV
								(Start) 01/22/17 15:07		
								(End) 01/25/17 16:15		

Client Sample ID: TB-20170121

Lab Sample ID: 440-174238-3

Date Collected: 01/22/17 09:00

Matrix: Water

Date Received: 01/22/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	384504	01/26/17 10:16	HR	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	383885	01/23/17 23:47	WK	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-383885/4

Matrix: Water

Analysis Batch: 383885

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			01/23/17 19:10	1
Acrolein	ND		5.0	2.5	ug/L			01/23/17 19:10	1
Acrylonitrile	ND		2.0	1.0	ug/L			01/23/17 19:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	109		80 - 128		01/23/17 19:10	1
Dibromofluoromethane (Surr)	101		76 - 132		01/23/17 19:10	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/23/17 19:10	1

Lab Sample ID: LCS 440-383885/5

Matrix: Water

Analysis Batch: 383885

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	26.0		ug/L		104	37 - 150
Acrolein	25.0	24.9		ug/L		100	10 - 145
Acrylonitrile	250	284		ug/L		114	48 - 140

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	102		80 - 128
Dibromofluoromethane (Surr)	103		76 - 132
4-Bromofluorobenzene (Surr)	95		80 - 120

Lab Sample ID: 440-174238-1 MS

Matrix: Water

Analysis Batch: 383885

Client Sample ID: Outfall018_20170121_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	26.3		ug/L		105	10 - 140
Acrolein	ND		25.0	17.5		ug/L		70	10 - 147
Acrylonitrile	ND		250	303		ug/L		121	38 - 144

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 128
Dibromofluoromethane (Surr)	101		76 - 132
4-Bromofluorobenzene (Surr)	98		80 - 120

Lab Sample ID: 440-174238-1 MSD

Matrix: Water

Analysis Batch: 383885

Client Sample ID: Outfall018_20170121_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	25.3		ug/L		101	10 - 140	4	25
Acrolein	ND		25.0	15.1		ug/L		61	10 - 147	14	40
Acrylonitrile	ND		250	285		ug/L		114	38 - 144	6	40

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174238-1 MSD

Matrix: Water

Analysis Batch: 383885

Client Sample ID: Outfall018_20170121_Grab

Prep Type: Total/NA

<i>Surrogate</i>	<i>MSD %Recovery</i>	<i>MSD Qualifier</i>	<i>Limits</i>
<i>Toluene-d8 (Surr)</i>	101		80 - 128
<i>Dibromofluoromethane (Surr)</i>	102		76 - 132
<i>4-Bromofluorobenzene (Surr)</i>	96		80 - 120

Lab Sample ID: MB 440-384504/4

Matrix: Water

Analysis Batch: 384504

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Benzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Bromoform	ND		1.0	0.40	ug/L			01/26/17 08:37	1
Bromomethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Chlorobenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Dibromochloromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Chloroethane	ND		1.0	0.40	ug/L			01/26/17 08:37	1
Chloroform	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Chloromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Bromodichloromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Ethylbenzene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Methylene Chloride	ND		2.0	0.88	ug/L			01/26/17 08:37	1
Tetrachloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Toluene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Trichlorofluoromethane	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Vinyl chloride	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Trichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
m,p-Xylene	ND		1.0	0.50	ug/L			01/26/17 08:37	1
Naphthalene	ND		1.0	0.40	ug/L			01/26/17 08:37	1
o-Xylene	ND		0.50	0.25	ug/L			01/26/17 08:37	1
Xylenes, Total	ND		1.0	0.50	ug/L			01/26/17 08:37	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			01/26/17 08:37	1
1,2-Dichloro-1,1,2-trifluoroethane	ND		2.0	1.0	ug/L			01/26/17 08:37	1
Cyclohexane	ND		2.0	1.0	ug/L			01/26/17 08:37	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384504/4
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	98		80 - 120		01/26/17 08:37	1
Dibromofluoromethane (Surr)	104		76 - 132		01/26/17 08:37	1
Toluene-d8 (Surr)	104		80 - 128		01/26/17 08:37	1

Lab Sample ID: LCS 440-384504/5
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.
							Limits
1,1,1-Trichloroethane	25.0	25.5		ug/L		102	70 - 130
1,1,2,2-Tetrachloroethane	25.0	23.6		ug/L		95	63 - 130
1,1,2-Trichloroethane	25.0	26.1		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	24.9		ug/L		100	64 - 130
1,1-Dichloroethene	25.0	24.9		ug/L		100	70 - 130
1,2-Dichlorobenzene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichloroethane	25.0	24.9		ug/L		100	57 - 138
1,2-Dichloropropane	25.0	24.0		ug/L		96	67 - 130
1,3-Dichlorobenzene	25.0	25.3		ug/L		101	70 - 130
1,4-Dichlorobenzene	25.0	23.6		ug/L		95	70 - 130
Benzene	25.0	23.9		ug/L		96	68 - 130
Bromoform	25.0	25.8		ug/L		103	60 - 148
Bromomethane	25.0	20.2		ug/L		81	64 - 139
Carbon tetrachloride	25.0	26.3		ug/L		105	60 - 150
Chlorobenzene	25.0	23.5		ug/L		94	70 - 130
Dibromochloromethane	25.0	25.5		ug/L		102	69 - 145
Chloroethane	25.0	23.0		ug/L		92	64 - 135
Chloroform	25.0	25.2		ug/L		101	70 - 130
Chloromethane	25.0	24.4		ug/L		98	47 - 140
cis-1,3-Dichloropropene	25.0	24.7		ug/L		99	70 - 133
Bromodichloromethane	25.0	25.8		ug/L		103	70 - 132
Ethylbenzene	25.0	23.6		ug/L		94	70 - 130
Methylene Chloride	25.0	26.5		ug/L		106	52 - 130
Tetrachloroethene	25.0	25.6		ug/L		103	70 - 130
Toluene	25.0	23.8		ug/L		95	70 - 130
trans-1,2-Dichloroethene	25.0	25.6		ug/L		102	70 - 130
trans-1,3-Dichloropropene	25.0	24.1		ug/L		96	70 - 132
Trichlorofluoromethane	25.0	29.9		ug/L		120	60 - 150
Vinyl chloride	25.0	22.1		ug/L		88	59 - 133
Trichloroethene	25.0	26.4		ug/L		106	70 - 130
cis-1,2-Dichloroethene	25.0	25.6		ug/L		103	70 - 133
Naphthalene	25.0	25.3		ug/L		101	60 - 140
Xylenes, Total	50.0	49.4		ug/L		99	70 - 130
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	23.4		ug/L		94	60 - 140

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	103		76 - 132

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384504/5
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

<i>Surrogate</i>	<i>LCS</i> <i>%Recovery</i>	<i>LCS</i> <i>Qualifier</i>	<i>Limits</i>
<i>Toluene-d8 (Surr)</i>	100		80 - 128

Lab Sample ID: 440-174238-1 MS
Matrix: Water
Analysis Batch: 384504

Client Sample ID: Outfall018_20170121_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	27.3		ug/L		109	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	25.0		ug/L		100	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.8		ug/L		111	70 - 130
1,1-Dichloroethane	ND		25.0	26.9		ug/L		107	65 - 130
1,1-Dichloroethene	ND		25.0	25.9		ug/L		104	70 - 130
1,2-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
1,2-Dichloroethane	ND		25.0	27.2		ug/L		109	56 - 146
1,2-Dichloropropane	ND		25.0	26.2		ug/L		105	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.7		ug/L		111	70 - 130
1,4-Dichlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130
Benzene	ND		25.0	25.8		ug/L		103	66 - 130
Bromoform	ND		25.0	27.4		ug/L		110	59 - 150
Bromomethane	ND		25.0	24.1		ug/L		97	62 - 131
Carbon tetrachloride	ND		25.0	28.7		ug/L		115	60 - 150
Chlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130
Dibromochloromethane	ND		25.0	28.0		ug/L		112	70 - 148
Chloroethane	ND		25.0	26.9		ug/L		108	68 - 130
Chloroform	ND		25.0	27.2		ug/L		109	70 - 130
Chloromethane	ND		25.0	28.1		ug/L		112	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.5		ug/L		106	70 - 133
Bromodichloromethane	ND		25.0	27.2		ug/L		109	70 - 138
Ethylbenzene	ND		25.0	24.9		ug/L		100	70 - 130
Methylene Chloride	ND		25.0	27.2		ug/L		109	52 - 130
Tetrachloroethene	ND		25.0	27.3		ug/L		109	70 - 137
Toluene	ND		25.0	25.7		ug/L		103	70 - 130
trans-1,2-Dichloroethene	ND		25.0	28.4		ug/L		113	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.9		ug/L		104	70 - 138
Trichlorofluoromethane	ND		25.0	31.6		ug/L		126	60 - 150
Vinyl chloride	ND		25.0	23.8		ug/L		95	50 - 137
Trichloroethene	ND		25.0	28.2		ug/L		113	70 - 130
cis-1,2-Dichloroethene	ND		25.0	28.2		ug/L		113	70 - 130
Naphthalene	ND		25.0	27.3		ug/L		109	60 - 140
Xylenes, Total	ND		50.0	52.8		ug/L		106	70 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	25.9		ug/L		104	60 - 140

<i>Surrogate</i>	<i>MS</i> <i>%Recovery</i>	<i>MS</i> <i>Qualifier</i>	<i>Limits</i>
<i>4-Bromofluorobenzene (Surr)</i>	94		80 - 120
<i>Dibromofluoromethane (Surr)</i>	104		76 - 132
<i>Toluene-d8 (Surr)</i>	101		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174238-1 MSD

Matrix: Water

Analysis Batch: 384504

Client Sample ID: Outfall018_20170121_Grab

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	27.2		ug/L		109	70 - 130	0	20
1,1,2,2-Tetrachloroethane	ND		25.0	25.0		ug/L		100	63 - 130	0	30
1,1,2-Trichloroethane	ND		25.0	27.8		ug/L		111	70 - 130	0	25
1,1-Dichloroethane	ND		25.0	26.5		ug/L		106	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	25.6		ug/L		103	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130	0	20
1,2-Dichloroethane	ND		25.0	27.8		ug/L		111	56 - 146	2	20
1,2-Dichloropropane	ND		25.0	26.5		ug/L		106	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	27.5		ug/L		110	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	25.5		ug/L		102	70 - 130	0	20
Benzene	ND		25.0	26.0		ug/L		104	66 - 130	1	20
Bromoform	ND		25.0	28.2		ug/L		113	59 - 150	3	25
Bromomethane	ND		25.0	22.9		ug/L		91	62 - 131	5	25
Carbon tetrachloride	ND		25.0	28.0		ug/L		112	60 - 150	2	25
Chlorobenzene	ND		25.0	25.7		ug/L		103	70 - 130	1	20
Dibromochloromethane	ND		25.0	28.3		ug/L		113	70 - 148	1	25
Chloroethane	ND		25.0	25.6		ug/L		103	68 - 130	5	25
Chloroform	ND		25.0	27.6		ug/L		111	70 - 130	2	20
Chloromethane	ND		25.0	27.2		ug/L		109	39 - 144	3	25
cis-1,3-Dichloropropene	ND		25.0	26.6		ug/L		106	70 - 133	0	20
Bromodichloromethane	ND		25.0	27.9		ug/L		111	70 - 138	3	20
Ethylbenzene	ND		25.0	25.1		ug/L		101	70 - 130	1	20
Methylene Chloride	ND		25.0	26.4		ug/L		106	52 - 130	3	20
Tetrachloroethene	ND		25.0	26.9		ug/L		108	70 - 137	1	20
Toluene	ND		25.0	25.3		ug/L		101	70 - 130	1	20
trans-1,2-Dichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	26.8		ug/L		107	70 - 138	3	25
Trichlorofluoromethane	ND		25.0	32.7		ug/L		131	60 - 150	3	25
Vinyl chloride	ND		25.0	23.3		ug/L		93	50 - 137	2	30
Trichloroethene	ND		25.0	28.4		ug/L		114	70 - 130	1	20
cis-1,2-Dichloroethene	ND		25.0	28.1		ug/L		112	70 - 130	0	20
Naphthalene	ND		25.0	27.6		ug/L		110	60 - 140	1	30
Xylenes, Total	ND		50.0	53.2		ug/L		106	70 - 133	1	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	25.5		ug/L		102	60 - 140	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	101		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-385124/4
Matrix: Water
Analysis Batch: 385124

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		0.050	0.025	mg/L			01/30/17 10:03	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		65 - 140					01/30/17 10:03	1

Lab Sample ID: LCS 440-385124/5
Matrix: Water
Analysis Batch: 385124

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	0.800	0.704		mg/L		88	80 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	105		65 - 140				

Lab Sample ID: 440-174238-1 MS
Matrix: Water
Analysis Batch: 385124

Client Sample ID: Outfall018_20170121_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		0.800	0.731		mg/L		91	65 - 140
Surrogate	%Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	96		65 - 140						

Lab Sample ID: 440-174238-1 MSD
Matrix: Water
Analysis Batch: 385124

Client Sample ID: Outfall018_20170121_Grab
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		0.800	0.756		mg/L		94	65 - 140	3	20
Surrogate	%Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	103		65 - 140								

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-384522/1-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384522

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C13-C28	ND		0.50	0.10	mg/L		01/26/17 07:43	01/27/17 16:42	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane	73		45 - 120				01/26/17 07:43	01/27/17 16:42	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 440-384522/2-A
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384522

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
C10-C28	1.00	0.675		mg/L		67	40 - 115
Surrogate		LCS %Recovery	LCS Qualifier				Limits
<i>n-Octacosane</i>		69					45 - 120

Lab Sample ID: 440-174238-1 MS
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Outfall018_20170121_Grab
Prep Type: Total/NA
Prep Batch: 384522

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
C10-C28	0.12	J,DX	0.957	0.516		mg/L		41	40 - 120
Surrogate		MS %Recovery	MS Qualifier						Limits
<i>n-Octacosane</i>		58							45 - 120

Lab Sample ID: 440-174238-1 MSD
Matrix: Water
Analysis Batch: 384637

Client Sample ID: Outfall018_20170121_Grab
Prep Type: Total/NA
Prep Batch: 384522

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
C10-C28	0.12	J,DX	0.952	0.545		mg/L		45	40 - 120	5	30
Surrogate		MSD %Recovery	MSD Qualifier						Limits		Limit
<i>n-Octacosane</i>		62							45 - 120		

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-384519/3
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			01/26/17 08:22	1

Lab Sample ID: LCS 440-384519/4
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Specific Conductance	768	768		umhos/cm		100	90 - 110

Lab Sample ID: 440-174256-B-1 DU
Matrix: Water
Analysis Batch: 384519

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Specific Conductance	110		105		umhos/cm		3	5

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-386004/1-A
 Matrix: Water
 Analysis Batch: 386405

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 386004

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/02/17 08:54	02/03/17 14:29	1

Lab Sample ID: LCS 440-386004/2-A
 Matrix: Water
 Analysis Batch: 386405

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 386004

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
HEM (Oil & Grease)	40.0	37.6		mg/L		94	78 - 114

Lab Sample ID: LCSD 440-386004/3-A
 Matrix: Water
 Analysis Batch: 386405

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 386004

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
HEM (Oil & Grease)	40.0	36.6		mg/L		92	78 - 114	3	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

GC/MS VOA

Analysis Batch: 383885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	624	
440-174238-3	TB-20170121	Total/NA	Water	624	
MB 440-383885/4	Method Blank	Total/NA	Water	624	
LCS 440-383885/5	Lab Control Sample	Total/NA	Water	624	
440-174238-1 MS	Outfall018_20170121_Grab	Total/NA	Water	624	
440-174238-1 MSD	Outfall018_20170121_Grab	Total/NA	Water	624	

Analysis Batch: 384504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	624	
440-174238-3	TB-20170121	Total/NA	Water	624	
MB 440-384504/4	Method Blank	Total/NA	Water	624	
LCS 440-384504/5	Lab Control Sample	Total/NA	Water	624	
440-174238-1 MS	Outfall018_20170121_Grab	Total/NA	Water	624	
440-174238-1 MSD	Outfall018_20170121_Grab	Total/NA	Water	624	

GC VOA

Analysis Batch: 385124

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	8015B	
MB 440-385124/4	Method Blank	Total/NA	Water	8015B	
LCS 440-385124/5	Lab Control Sample	Total/NA	Water	8015B	
440-174238-1 MS	Outfall018_20170121_Grab	Total/NA	Water	8015B	
440-174238-1 MSD	Outfall018_20170121_Grab	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 384522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	3510C	
MB 440-384522/1-A	Method Blank	Total/NA	Water	3510C	
LCS 440-384522/2-A	Lab Control Sample	Total/NA	Water	3510C	
440-174238-1 MS	Outfall018_20170121_Grab	Total/NA	Water	3510C	
440-174238-1 MSD	Outfall018_20170121_Grab	Total/NA	Water	3510C	

Analysis Batch: 384637

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	8015B	384522
MB 440-384522/1-A	Method Blank	Total/NA	Water	8015B	384522
LCS 440-384522/2-A	Lab Control Sample	Total/NA	Water	8015B	384522
440-174238-1 MS	Outfall018_20170121_Grab	Total/NA	Water	8015B	384522
440-174238-1 MSD	Outfall018_20170121_Grab	Total/NA	Water	8015B	384522

General Chemistry

Analysis Batch: 383898

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	SM 2540F	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

General Chemistry (Continued)

Analysis Batch: 384519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	120.1	
MB 440-384519/3	Method Blank	Total/NA	Water	120.1	
LCS 440-384519/4	Lab Control Sample	Total/NA	Water	120.1	
440-174256-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 386004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	1664A	
MB 440-386004/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-386004/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-386004/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 386405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	1664A	386004
MB 440-386004/1-A	Method Blank	Total/NA	Water	1664A	386004
LCS 440-386004/2-A	Lab Control Sample	Total/NA	Water	1664A	386004
LCSD 440-386004/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	386004

Biology

Analysis Batch: 384605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174238-1	Outfall018_20170121_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Grab

TestAmerica Job ID: 440-174238-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Human Fecal Toolbox ID™
Detection of the fecal Human gene biomarker for Human fecal contamination by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.
Date Received: January 24, 2017
Report Generated: February 7, 2017

SM #	Client #	Analysis Requested	Species	DNA Analytical Results
SM-7A24006	440-174196-1 (Outfall001_20170120)	Human Bacteroidetes ID	Dorei	Present
SM-7A24007	440-174173 (Outfall002_20170102_Grab)	Human Bacteroidetes ID	Dorei	Absent
SM-7A24008	440-174238 (Outfall018_20170122)	Human Bacteroidetes ID	Dorei	Absent

Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of Source Molecular Corporation, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to Source Molecular Corp. The company shall not be liable for any damages, either direct or consequential. Source Molecular Corp. provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact Source Molecular in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.



Laboratory Comments

Negative Results

In sample(s) classified as negative, the human-associated Bacteroidetes gene biomarker was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis. It is important to note that a negative result does not mean that the sample does not definitely have human fecal contamination. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution. In order to strengthen the result, a negative sample should be analyzed further for human fecal contamination with other DNA analytical tests. A list of human fecal ID tests can be found at www.sourcemolecular.com/human.

Positive Results

In sample(s) classified as positive, the human-associated Bacteroidetes gene biomarker(s) was detected in both test replicates suggesting that human fecal contamination is present in the water sample(s). The biomarker(s) serve as an indicator of the targeted fecal pollution, but the presence of the biomarker does not signify conclusively the presence of that form of fecal pollution. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

Human Fecal Reference Samples

The client is encouraged to submit samples from the surrounding wastewater facilities and/or septic systems in order to gain a better understanding of the concentration of the human-associated fecal Bacteroidetes genetic marker as well as the concentration of the general fecal Bacteroidetes genetic marker in the geographic region of interest. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

Each submitted water sample was filtered through 0.45 micron membrane filters. Each filter was placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample was homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol.

Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing the sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. ' All assays were run in duplicate.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and to reveal any false negatives or false positives. The accumulation of PCR product is detected and graphed in an amplification plot. If the fecal indicator organism is absent in the sample, this accumulation is not detected and the sample is considered negative. If accumulation of PCR product is detected, the sample is considered positive.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

Human Bacteroidetes ID™ Species: *B. stercoris*,
Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

¹Boehm, A., Fuhman, J., Mrse, R., Grant, S. **Tiered approach for identification of a human fecal pollution source at a recreational beach: case study at Avalon Bay, Catalina Island, California.** Environ Sci Technol. 2003 37: 673–680.

²Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

³Bernhard, A., Field, K. **A PCR assay to discriminate human and ruminant feces on the basis of host differences in Bacteroides-Prevotella genes encoding 16S rRNA.** Appl. Environ. Microbiol. 2000b 66: 4571-4574.

⁴Ahmed, w., Masters, N., Toze, S. **Consistency in the host specificity and host sensitivity of the Bacteroides HF183 marker for sewage pollution tracking.** Lett. Appl. Microbiol. 2012 55: 283-289.

⁵Scott, T., Rose, J., Jenkins, T., Farrah, S., Lukasik, J. **Microbial Source Tracking: Current Methodology and Future Directions.** Appl. Environ. Microbiol. 2002 68: 5796-5803.

⁶Bernhard, A., Field, K. **Identification of nonpoint sources of fecal pollution in coastal waters by using host-specific 16S ribosomal DNA genetic markers from fecal anaerobes.** Appl. Environ. Microbiol. 2000a 66: 1587-1594.

⁷Fogarty, L., Voytek, M. **A Comparison of Bacteroides-Prevotella 16S rRNA Genetic Markers for Fecal Samples from Different Animal Species.** Appl. Environ. Microbiol. 2005 71: 5999-6007.

⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., et al. **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**



CHAIN OF CUSTODY FORM

440-174238 Chain of Custody

174238

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	M/SMSD
Outfall 018	Outfall018_20170121_Grab	1/21/2017	WM	125mL Sterile Poly	1	None	5	No
			WM	125mL Sterile Poly	3	NazSO3	10	No
			WM	1 L Glass Amber	2	HCl	15	No
			WM	40 mL VOA	9	HCl	45	Yes
			WM	40 mL VOA	9	None	55	Yes
			WM	40 mL VOA	9	HCl	60	Yes
			WM	1 L Glass Amber	8	None	65	Yes
			WM	1 L Poly	1	None	70	No
			WM	500 mL Poly	1	None	75	No
			WM	1 L Glass Amber	2	HCl	15	No
			WM	40 mL VOA	3	HCl	45	No
			WM	40 mL VOA	3	None	55	No
			WM	500 mL Poly	1	None	75	No
			WQ	40 mL VOA	2	HCl	45	No
			WQ	40 mL VOA	2	None	55	No

Project: Boeing-SSFL NPDES
 Permit 2017
 Annual Outfall (001, 002, 011, 018)
 Outfall 018
 Grab

Project Manager: Nancy Gardiner
 618.265.7132, 858.337.4081 (cell)

Field Manager: Mark Dominick
 618.350.7312, 618.589.0702 (cell)

Client Name/Address:
 Haley & Aldrich
 5333 Mission Center Rd Suite 300
 San Diego, CA 92108

Test America Contact: Unvashi Patel
 17481 Derian Ave Suite #100
 Irvine CA 92614
 Tel 949-260-3289
 Cell 949-333-9055

Sampler:

Received By: [Signature] Date/Time: 12:00 / 1/22/17
 Company: JHAENV. [Signature] 1/22/17
 Received By: [Signature] Date/Time: 1-22-17 14:04
 Company: [Signature] 1/22/17
 Received By: [Signature] Date/Time: [Signature] Date/Time: [Signature] Date/Time:

ANALYSIS REQUIRED

MST-Bacteroides, Human	X
E. coli (SM221)	X
Settleable Solids	
Conductivity	
Oil & Grease (1664-HEM)	
VOCs + VOCs PP + xylenes, Freon 113, Freon 123A, Cyclohexane, cis-1,2-DCE	X
VOCs (824) - only A+A+2CVE	X
8015 - gas (GRO)(C4-C12)	
8015 - diesel/fuel (DRO (C13-C29))	

Field Readings (Include units)
 Time of Readings: 09:45
 DO: 7.55 mg/L @ 698
 pH: 7.53 pH unit
 Temp: 72.66 C/F
 TRC: 0.32 mg/L

Field readings QC
 Checked by: [Signature]
 Date/Time: 1/25/17

Comments
 Deliver to lab ASAP 8 hr hold time
 Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions

Turn-around time: (Check)
 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____

Sample integrity: (Check)
 Intact: _____ On Ice: _____
 Data Requirements: (Check)
 No Level IV: _____ All Level IV: _____

0.3/0.4
 0.2/1.2 at 804

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174238-1

Login Number: 174238

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174317-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
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Houston, Texas 77054

www.mecx.net





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- 1 – Sample Identification
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I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-174317-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170123_Comp	440-174317-1	N/A	Water	1/23/17 11:00 AM	DV-WC-0077, E1613B, E180.1, E200.7, E200.8, E218.6, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2340B, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5310B, SM5540, SW8260SIM
Outfall018_20170123_Comp_F	440-174317-2	N/A	Water	1/23/17 11:00 AM	E200.7, E200.8, E245.1, SM2340B



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174317-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, with one exception noted below.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine.
- Samples for method 1613B analysis were transferred to TA-Sacramento.

The following issues were noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times and sample numbers on the COC do not match the revised collection dates and times and sample numbers used in the laboratory's raw data package and in this report.
- Sample Outfall018_20170123_Comp was prepared outside of preparation holding time for monomethyl hydrazine due to logistical challenges of shipping the sample from Irvine to Denver such that the samples arrived in Denver outside of the preservation holding time.
- Sample Outfall018_20170123_Comp for total organic carbon analysis was received in the lab with a pH greater than 2 but was acidified to a pH less than 2 prior to analysis; therefore, no qualifications are necessary.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, OCDD, OCDF, and for totals HpCDD and HpCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall018_20170123_Comp. The result for total HPCDD was qualified as nondetected (U). The reviewer verified that peaks comprising



total HpCDF in the sample included more peaks than the method blank total. The sample result for total HpCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Reported EMPCs for isomers 1,2,3,4,7,8-HxCDD, 1,2,3,4,6,8-HxCDD, and 1,2,3,7,8-PeCDF were qualified as estimated nondetects (UJ). Total PeCDF consisting of the single isomer qualified as an EMPC was also qualified as an estimated nondetect (UJ). Remaining totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.7, 200.8, 245.1 AND SM2340B— METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^X reviewed the SDG on March 24, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.7, 200.8, and 245.1*, *Standard Method 2340B* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall018_20170123_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 4 days after receipt. All dissolved metals, dissolved mercury and hardness results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall018_20170123_Comp and Outfall018_20170123_Comp_F for methods 200.7 and 200.8, and on sample Outfall018_20170123_Comp for method 245.1. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSES – 608 PESTICIDES AND PCBs

E. Wessling of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, EPA Method 608, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Target compounds were not detected in method blanks.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits. Chlordane and toxaphene were not spiked in the pesticide LCS.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) and PCB surrogate decachlorobiphenyl (DCB) were recovered within the laboratory control limits of 10-150% and 29-115%, respectively, in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the site sample for pesticides and PCBs. Recoveries and RPD were within laboratory control limits except for the recovery of beta BHC in the MS only. Beta BHC was recovered at 48% below the QC limit of 50-120%. No qualifications were required as beta BHC was recovered with QC limits in the MSD.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides and seven Aroclors by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

V.7. SYSTEM PERFORMANCE

In reviewing the raw data, MEC^X noted that the laboratory manually integrated 4,4'-DDE and endosulfan I in all calibration levels, LCS and MS/MSD samples. The peak, which was split into two peaks on the primary column, was less than 25% resolved. Based upon professional judgement, the reviewer qualified 4,4'-DDE and endosulfan I as estimated nondetects (UJ) in the site sample, as it was unclear whether the occurrence of a single peak would cause a retention time shift or if the system would appropriately identify these target compounds.



VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were performed on sample Outfall018_20170123_Comp. Recoveries were within the laboratory control limits of 80-120% and the RPD was $\leq 20\%$.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the RL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^x reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1)*, *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met, with exceptions noted below. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$, with the exception of the ICV $\%D$ of -34.2 for benzidine, and CCV $\%Ds$ for benzo(b)fluoranthene and benzo(k)fluoranthene of 20.3% and 22.2%, respectively. The sample result for benzidine was subsequently rejected (see Matrix Spike/Matrix Spike Duplicate section), and was not further qualified for the ICV outlier. Results for benzo(b)fluoranthene and benzo(k)fluoranthene, both nondetects, were qualified as estimated (UJ) in sample Outfall018_20170123_Comp.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG, Outfall018_20170123_Comp. Benzidine and 3,3'-dichlorobenzidine were not recovered in the MS or MSD. The nondetect results for both compounds were rejected (R) in sample Outfall018_20170123_Comp. Target compounds 1,2-diphenylhydrazine and n-nitrosodiphenylamine were recovered below the control limits of 60-120% in the MSD only, at 22% and 34%, respectively. Qualifications were not assigned for the single recovery outliers. Due to generally lower MS recoveries compared to MSD recoveries, 21 RPDs exceeded the laboratory control limits; however as none of the RPD outlier compounds were detected in the parent sample, qualifications were not assigned.



VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1 FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2 FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for semivolatile target compounds by EPA Method 625. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 890 milliliters was less than the nominal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. EPA METHOD 8260B SIM—1,4-DIOXANE

L. Calvin of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 8260B*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VIII.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.



VIII.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRF and the ICV and continuing calibration RRFs were ≥ 0.05 for 1,4-dioxane. The initial calibration %RSD was $\leq 15\%$. The second source ICV and CCV %Ds were within the control limit of $\leq 20\%$.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

Target compound 1,4-dioxane was not detected in the method blank.

VIII.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the laboratory control limits.

VIII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on the sample in this SDG, Outfall018_20170123_Comp. Recoveries and the RPD for 1,4-dioxane were within the laboratory control limits of 70-130% and $\leq 30\%$, respectively.

VIII.4. FIELD QC SAMPLES

MECX evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MECX used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

VIII.4.1. TRIP BLANKS

A trip blank was not identified for this SDG.

VIII.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VIII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standard: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VIII.6. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

VIII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VIII.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

VIII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IX. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.1, 218.6, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, 5310B, and 5540, Method DV-WC-0077, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IX.1. HOLDING TIMES

Although the analytical holding time, 28 days for monomethyl hydrazine (methyl hydrazine), was met, the sample was preserved nine hours past the 48-hour filtration and acid preservation holding time; therefore, nondetected monomethyl hydrazine in the site sample was qualified as estimated (UJ). Remaining analytical holding times as listed below were met:

- 24 hours from collection for hexavalent chromium
- 36 hours from collection for chronic toxicity
- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, fluoride, sulfate, and total organic carbon (TOC)

IX.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 80-120% for monomethyl hydrazine and 90-110% for the remaining analytes. The MRL recoveries for ammonia and hexavalent chromium were within the laboratory control limits of 10-200% and 50-150%, respectively. Analytical balance calibration logs were not provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.



IX.3. QUALITY CONTROL SAMPLES

IX.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

IX.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs for BOD and total cyanide were $\leq 20\%$ and $\leq 10\%$, respectively.

IX.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IX.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20170123_Comp for ammonia, anions, hexavalent chromium, MBAS, and total cyanide. Recoveries and RPDs were within the laboratory control limits.

IX.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

Sulfate in sample Outfall018_20170123_Comp was reported from a 50 \times dilution.

IX.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IX.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IX.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743171

Analysis Method DV-WC-0077

Sample Name Outfall018_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 11:00:00 AM Validation Level: 8

Lab Sample Name: 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Methyl hydrazine	N	60-34-4	ND	10	0.25	ug/L	UBU	UJ	H

Analysis Method E1613B

Sample Name Outfall018_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 11:00:00 AM Validation Level: 8

Lab Sample Name: 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000040	0.00010	0.00000035	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000050	0.00010	0.00000051	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000023	0.000052	0.00000023	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000067	0.000052	0.00000037	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000014	0.000052	0.00000026	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.0000012	0.000052	0.00000035	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000085	0.000052	0.00000035	ug/L	J,DXq	UJ	*III
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000093	0.000052	0.00000034	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000090	0.000052	0.00000037	ug/L	J,DXq	UJ	*III
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000095	0.000052	0.00000023	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000013	0.000052	0.00000030	ug/L	J,DX	J	DNQ
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000090	0.000052	0.00000044	ug/L	J,DXq	UJ	*III
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000052	0.00000055	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.0000011	0.000052	0.00000026	ug/L	J,DX	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000052	0.00000048	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000011	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000074	0.000010	0.00000030	ug/L	J,DXq	R	D

Analysis Method E1613B

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000036	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000054	0.000052	0.00000024	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000019	0.000052	0.00000037	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000042	0.000052	0.00000030	ug/L	J,DX	J	DNQ
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000049	0.000052	0.00000034	ug/L	J,DXq	J	DNQ, *III
Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000090	0.000052	0.00000046	ug/L	J,DXq	UJ	*III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000052	0.00000055	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000074	0.000010	0.00000030	ug/L	J,DXq	J	DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000036	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	2.4	0.10	0.040	NTU			

Analysis Method E200.7

Sample Name Outfall018_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	D	7440-38-2	ND	10	5.0	ug/L	UQP	UJ	H
Barium	D	7440-39-3	0.023	0.010	0.0050	mg/L	QP	J	H
Beryllium	D	7440-41-7	ND	2.0	1.0	ug/L	UQP	UJ	H
Boron	D	7440-42-8	0.057	0.050	0.025	mg/L	QP	J	H
Chromium	D	7440-47-3	ND	5.0	2.5	ug/L	UQP	UJ	H
Cobalt	D	7440-48-4	ND	10	2.5	ug/L	UQP	UJ	H
Iron	D	7439-89-6	ND	0.10	0.050	mg/L	UQP	UJ	H
Manganese	D	7439-96-5	ND	20	10	ug/L	UQP	UJ	H
Nickel	D	7440-02-0	ND	10	5.0	ug/L	UQP	UJ	H
Vanadium	D	7440-62-2	ND	10	5.0	ug/L	UQP	UJ	H
Zinc	D	7440-66-6	63	20	10	ug/L	MBQP	J	H

Analysis Method E200.7**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Arsenic	T	7440-38-2	ND	10	5.0	ug/L	U	U	
Barium	T	7440-39-3	0.022	0.010	0.0050	mg/L			
Beryllium	T	7440-41-7	ND	2.0	1.0	ug/L	U	U	
Boron	T	7440-42-8	0.056	0.050	0.025	mg/L			
Chromium	T	7440-47-3	ND	5.0	2.5	ug/L	U	U	
Cobalt	T	7440-48-4	ND	10	2.5	ug/L	U	U	
Iron	T	7439-89-6	0.098	0.10	0.050	mg/L	J,DX	J	DNQ
Manganese	T	7439-96-5	14	20	10	ug/L	J,DX	J	DNQ
Nickel	T	7440-02-0	ND	10	5.0	ug/L	U	U	
Vanadium	T	7440-62-2	ND	10	5.0	ug/L	U	U	
Zinc	T	7440-66-6	44	20	10	ug/L			

Analysis Method E200.8**Sample Name** Outfall018_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	D	7440-36-0	ND	2.0	0.50	ug/L	UQP	UJ	H
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	1.8	2.0	0.50	ug/L	J,DXQP	J	DNQ, H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H
Silver	D	7440-22-4	ND	1.0	0.50	ug/L	UQP	UJ	H
Thallium	D	7440-28-0	ND	1.0	0.50	ug/L	UQP	UJ	H

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.51	2.0	0.50	ug/L	J,DX	J	DNQ
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	1.7	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Silver	T	7440-22-4	ND	1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0	ND	1.0	0.50	ug/L	U	U	

Analysis Method E218.6**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	0.29	1.0	0.25	ug/L	J,DX	J	DNQ

Analysis Method E245.1**Sample Name** Outfall018_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E300**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	6.5	0.50	0.25	mg/L			
Fluoride	N	16984-48-8	ND	0.50	0.25	mg/L	U	U	
Nitrate (as N)	N	14797-55-8	0.98	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.98	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	120	25	13	mg/L			

Analysis Method E314.0**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0051	0.0040	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0051	0.0030	ug/L	U	UJ	*III
4,4'-DDT	N	50-29-3	ND	0.010	0.0040	ug/L	U	U	
Aldrin	N	309-00-2	ND	0.0051	0.0015	ug/L	U	U	
alpha-BHC	N	319-84-6	ND	0.0051	0.0025	ug/L	U	U	
Aroclor-1016 (PCB-1016)	N	12674-11-2	ND	0.51	0.25	ug/L	U	U	
Aroclor-1221 (PCB-1221)	N	11104-28-2	ND	0.51	0.25	ug/L	U	U	
Aroclor-1232 (PCB-1232)	N	11141-16-5	ND	0.51	0.25	ug/L	U	U	
Aroclor-1242 (PCB-1242)	N	53469-21-9	ND	0.51	0.25	ug/L	U	U	
Aroclor-1248 (PCB-1248)	N	12672-29-6	ND	0.51	0.25	ug/L	U	U	
Aroclor-1254 (PCB-1254)	N	11097-69-1	ND	0.51	0.25	ug/L	U	U	
Aroclor-1260 (PCB-1260)	N	11096-82-5	ND	0.51	0.25	ug/L	U	U	
beta-BHC	N	319-85-7	ND	0.010	0.0040	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.10	0.081	ug/L	U	U	
delta-BHC	N	319-86-8	ND	0.0051	0.0035	ug/L	U	U	
Dieldrin	N	60-57-1	ND	0.0051	0.0020	ug/L	U	U	
Endosulfan I	N	959-98-8	ND	0.0051	0.0030	ug/L	U	UJ	*III
Endosulfan II	N	33213-65-9	ND	0.0051	0.0020	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8	ND	0.010	0.0030	ug/L	U	U	
Endrin	N	72-20-8	ND	0.0051	0.0020	ug/L	U	U	
Endrin aldehyde	N	7421-93-4	ND	0.010	0.0020	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9	ND	0.010	0.0030	ug/L	U	U	
Heptachlor	N	76-44-8	ND	0.010	0.0030	ug/L	U	U	
Heptachlor epoxide	N	1024-57-3	ND	0.0051	0.0025	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.51	0.25	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,4-Trichlorobenzene	N	120-82-1	ND	1.12	0.562	ug/L	U	U	
1,2-Dichlorobenzene	N	95-50-1	ND	0.562	0.225	ug/L	U	U	
1,2-Diphenylhydrazine	N	122-66-7	ND	1.12	0.562	ug/L	U	U	
1,3-Dichlorobenzene	N	541-73-1	ND	0.562	0.225	ug/L	U	U	
1,4-Dichlorobenzene	N	106-46-7	ND	0.562	0.225	ug/L	U	U	

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2,2'-oxybis(1-Chloropropane)	N	108-60-1	ND	0.562	0.225	ug/L	U	U	
2,4,6-Trichlorophenol	N	88-06-2	ND	1.12	0.562	ug/L	U	U	
2,4-Dichlorophenol	N	120-83-2	ND	2.25	1.12	ug/L	U	U	
2,4-Dimethylphenol	N	105-67-9	ND	2.25	1.12	ug/L	U	U	
2,4-Dinitrophenol	N	51-28-5	ND	5.62	2.25	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	5.62	2.25	ug/L	U	U	
2,6-Dinitrotoluene	N	606-20-2	ND	5.62	2.25	ug/L	U	U	
2-Chloronaphthalene	N	91-58-7	ND	0.562	0.225	ug/L	U	U	
2-Chlorophenol	N	95-57-8	ND	1.12	0.562	ug/L	U	U	
2-Nitrophenol	N	88-75-5	ND	2.25	1.12	ug/L	U	U	
3,3'-Dichlorobenzidine	N	91-94-1	ND	5.62	2.25	ug/L	U	R	Q
4,6-Dinitro-2-methylphenol	N	534-52-1	ND	5.62	2.25	ug/L	U	U	
4-Bromophenyl phenyl ether	N	101-55-3	ND	1.12	0.562	ug/L	U	U	
4-Chloro-3-methylphenol	N	59-50-7	ND	2.25	0.225	ug/L	U	U	
4-Chlorophenyl phenyl ether	N	7005-72-3	ND	0.562	0.225	ug/L	U	U	
4-Nitrophenol	N	100-02-7	ND	5.62	2.25	ug/L	U	U	
Acenaphthene	N	83-32-9	ND	0.562	0.225	ug/L	U	U	
Acenaphthylene	N	208-96-8	ND	0.562	0.225	ug/L	U	U	
Anthracene	N	120-12-7	ND	0.562	0.225	ug/L	U	U	
Benzidine	N	92-87-5	ND	11.2	5.62	ug/L	U	R	Q
Benzo(a)anthracene	N	56-55-3	ND	5.62	2.25	ug/L	U	U	
Benzo(a)pyrene	N	50-32-8	ND	2.25	0.562	ug/L	U	U	
Benzo(b)fluoranthene	N	205-99-2	ND	2.25	1.12	ug/L	U	UJ	C
Benzo(g,h,i)perylene	N	191-24-2	ND	5.62	2.25	ug/L	U	U	
Benzo(k)fluoranthene	N	207-08-9	ND	0.562	0.281	ug/L	U	UJ	C
bis(2-Chloroethoxy)methane	N	111-91-1	ND	0.562	0.225	ug/L	U	U	
bis(2-Chloroethyl)ether	N	111-44-4	ND	0.562	0.225	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.62	2.25	ug/L	U	U	
Butyl benzylphthalate	N	85-68-7	ND	5.62	2.25	ug/L	U	U	
Chrysene	N	218-01-9	ND	0.562	0.225	ug/L	U	U	
Dibenz(a,h)anthracene	N	53-70-3	ND	0.562	0.281	ug/L	U	U	
Diethyl phthalate	N	84-66-2	ND	1.12	0.562	ug/L	U	U	
Dimethyl phthalate	N	131-11-3	ND	0.562	0.281	ug/L	U	U	
Di-n-butylphthalate	N	84-74-2	ND	2.25	1.12	ug/L	U	U	
Di-n-octyl phthalate	N	117-84-0	ND	5.62	2.25	ug/L	U	U	
Fluoranthene	N	206-44-0	ND	0.562	0.225	ug/L	U	U	
Fluorene	N	86-73-7	ND	0.562	0.225	ug/L	U	U	
Hexachlorobenzene	N	118-74-1	ND	1.12	0.562	ug/L	U	U	
Hexachlorobutadiene	N	87-68-3	ND	2.25	0.562	ug/L	U	U	
Hexachlorocyclopentadiene	N	77-47-4	ND	5.62	2.25	ug/L	U	U	
Hexachloroethane	N	67-72-1	ND	3.37	0.562	ug/L	U	U	
Indeno(1,2,3-cd)pyrene	N	193-39-5	ND	2.25	1.12	ug/L	U	U	
Isophorone	N	78-59-1	ND	1.12	0.562	ug/L	U	U	

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Naphthalene	N	91-20-3	ND	1.12	0.562	ug/L	U	U
Nitrobenzene	N	98-95-3	ND	1.12	0.562	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	2.25	1.12	ug/L	U	U
N-Nitrosodi-n-propylamine	N	621-64-7	ND	2.25	1.12	ug/L	U	U
N-Nitrosodiphenylamine	N	86-30-6	ND	1.12	0.562	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	2.25	1.12	ug/L	U	U
Phenanthrene	N	85-01-8	ND	0.562	0.225	ug/L	U	U
Phenol	N	108-95-2	ND	1.12	0.562	ug/L	U	U
Pyrene	N	129-00-0	ND	0.562	0.225	ug/L	U	U

Analysis Method EPA-821-R-02-013**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	1.06			% SURV			

Analysis Method SM2340**Sample Name** Outfall018_20170123_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-2

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	D	HARDNESSCA CO3	130	0.33	0.17	mg/L		J	H

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCA CO3	120	0.33	0.17	mg/L			

Analysis Method SM2540C**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	250	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	4.3	1.7	0.83	mg/L			

Analysis Method SM4500-CN-E**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method SM5210B**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD)	N	BOD	1.6	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method SM5310B**Sample Name** Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 1/23/2017 11:00:00 AM **Validation Level:** 8**Lab Sample Name:** 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Organic Carbon (TOC)	N	TOC	5.6	1.0	0.65	mg/L			

Analysis Method *SM5540*

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.11	0.10	0.050	mg/L			

Analysis Method *SW8260SIM*

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,4-Dioxane	N	123-91-1	ND	2.0	0.50	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174317-1

Client Project/Site: Annual Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/19/2017 11:57:37 AM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/19/2017 11:57:37 AM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174317-1	Outfall018_20170123_Comp	Water	01/23/17 11:00	01/23/17 15:50
440-174317-2	Outfall018_20170123_Comp_F	Water	01/23/17 11:00	01/23/17 15:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Job ID: 440-174317-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-174317-1

Comments

No additional comments.

Receipt

The samples were received on 1/23/2017 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.0° C, 2.1° C and 4.6° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

Method(s) 625: The continuing calibration verification (CCV) associated with batch 440-384955 recovered above the upper control limit for benzo(b)fluoranthene and benzo(k)fluoranthene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries of 3,3'-dichlorobenzidine for preparation batch 440-384349 and analytical batch 440-384955 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision of 1,2-diphenylhydrazine for preparation batch 440-384349 and analytical batch 440-384955 was greater than 50% and outside control limits. Sample matrix interference is suspected.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recovery for benzidine of preparation batch 440-384349 and analytical batch 440-385461 were 0% and outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 218.6: The continuing calibration verification (CCV) associated with batch 440-383776 recovered above the upper control limit for hexavalent chromium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Extraction technician missed adding surrogate to the Laboratory Control Sample (LCS) associated with batch preparation batch 440-384080 and analytical batch 440-384312. Surrogate recovery was within acceptance limits in Method Blank, Matrix Spike and Matrix Spike Duplicate and samples. Spike recovery was within limits for the LCS. Data not impacted. (LCS 440-384080/5-B)

Method(s) 608, 8082: Extraction technician missed adding surrogate to Laboratory Control Sample (LCS) associated with batch preparation batch 440-384080 and analytical batch 440-384311. Surrogate recovery was within acceptance limits in MB, MS, MSD and samples. Spike recovery was within acceptance limits in LCS. Samples ND. Data not impacted.

(LCS 440-384080/5-B)

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Job ID: 440-174317-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Method(s) 608: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-384080 and analytical batch 440-384572 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) Filtration: The following sample was prepared outside of preparation holding time due to logistical challenges of shipping the samples from Irvine to Denver such that the samples arrived in Denver outside of the preservation holding time: Outfall018_20170123_Comp (440-174317-1). Hydrazines by IC, DV-WC-0077, preparation batch 280-360047.

Method(s) SM 5310B: The reference method SM5310B requires samples to be preserved to a pH<2. The following samples was received with insufficient preservation at a pH of 3.77: Outfall018_20170123_Comp (440-174317-1). The pH of the sample was adjusted to the appropriate pH<2 using hydrochloric acid 1;1 in the laboratory prior to analysis.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 625: Elevated reporting limits are provided for the following sample due to insufficient sample provided for 8270 LL 3520 preparation/analysis: Outfall018_20170123_Comp (440-174317-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/31/17 23:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	88		80 - 120					01/31/17 23:37	1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Acenaphthylene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Anthracene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Benzidine	ND		11.2	5.62	ug/L		01/25/17 13:07	01/31/17 16:02	1
Benzo[a]anthracene	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
Benzo[b]fluoranthene	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
Benzo[k]fluoranthene	ND		0.562	0.281	ug/L		01/25/17 13:07	01/27/17 23:57	1
Benzo[a]pyrene	ND		2.25	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Bis(2-chloroethoxy)methane	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Bis(2-chloroethyl)ether	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Bis(2-ethylhexyl) phthalate	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
4-Bromophenyl phenyl ether	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Butyl benzyl phthalate	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
4-Chloro-3-methylphenol	ND		2.25	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
2-Chloronaphthalene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
2-Chlorophenol	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
4-Chlorophenyl phenyl ether	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Chrysene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Dibenz(a,h)anthracene	ND		0.562	0.281	ug/L		01/25/17 13:07	01/27/17 23:57	1
Di-n-butyl phthalate	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
1,2-Dichlorobenzene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
1,3-Dichlorobenzene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
1,4-Dichlorobenzene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
3,3'-Dichlorobenzidine	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
2,4-Dichlorophenol	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
Diethyl phthalate	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
2,4-Dimethylphenol	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
Dimethyl phthalate	ND		0.562	0.281	ug/L		01/25/17 13:07	01/27/17 23:57	1
4,6-Dinitro-2-methylphenol	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
2,4-Dinitrophenol	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
2,4-Dinitrotoluene	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
2,6-Dinitrotoluene	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
Di-n-octyl phthalate	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Fluoranthene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Fluorene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Hexachlorobenzene	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Hexachlorobutadiene	ND		2.25	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Hexachloroethane	ND		3.37	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Hexachlorocyclopentadiene	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
Indeno[1,2,3-cd]pyrene	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
Isophorone	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Nitrobenzene	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
2-Nitrophenol	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
4-Nitrophenol	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
N-Nitrosodimethylamine	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
N-Nitrosodiphenylamine	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
N-Nitrosodi-n-propylamine	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
Pentachlorophenol	ND		2.25	1.12	ug/L		01/25/17 13:07	01/27/17 23:57	1
Phenanthrene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Phenol	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Pyrene	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
1,2,4-Trichlorobenzene	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
2,4,6-Trichlorophenol	ND		1.12	0.562	ug/L		01/25/17 13:07	01/27/17 23:57	1
Benzo[g,h,i]perylene	ND		5.62	2.25	ug/L		01/25/17 13:07	01/27/17 23:57	1
bis (2-chloroisopropyl) ether	ND		0.562	0.225	ug/L		01/25/17 13:07	01/27/17 23:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	73		50 - 120				01/25/17 13:07	01/27/17 23:57	1
2-Fluorophenol	64		30 - 120				01/25/17 13:07	01/27/17 23:57	1
2,4,6-Tribromophenol	78		40 - 120				01/25/17 13:07	01/27/17 23:57	1
Nitrobenzene-d5	72		45 - 120				01/25/17 13:07	01/27/17 23:57	1
Terphenyl-d14	79		37 - 144				01/25/17 13:07	01/27/17 23:57	1
Phenol-d6	71		35 - 120				01/25/17 13:07	01/27/17 23:57	1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Aroclor 1221	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Aroclor 1232	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Aroclor 1242	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Aroclor 1248	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Aroclor 1254	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Aroclor 1260	ND		0.51	0.25	ug/L		01/24/17 12:17	01/25/17 14:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	83		29 - 115				01/24/17 12:17	01/25/17 14:49	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0051	0.0015	ug/L		01/24/17 12:17	01/26/17 13:37	1
alpha-BHC	ND		0.0051	0.0025	ug/L		01/24/17 12:17	01/26/17 13:37	1
beta-BHC	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 13:37	1
Chlordane (technical)	ND		0.10	0.081	ug/L		01/24/17 12:17	01/26/17 13:37	1
delta-BHC	ND		0.0051	0.0035	ug/L		01/24/17 12:17	01/26/17 13:37	1
Dieldrin	ND		0.0051	0.0020	ug/L		01/24/17 12:17	01/26/17 13:37	1
Endosulfan I	ND		0.0051	0.0030	ug/L		01/24/17 12:17	01/26/17 13:37	1
Endosulfan II	ND		0.0051	0.0020	ug/L		01/24/17 12:17	01/26/17 13:37	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 13:37	1
Endrin	ND		0.0051	0.0020	ug/L		01/24/17 12:17	01/26/17 13:37	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/24/17 12:17	01/26/17 13:37	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 13:37	1
Heptachlor	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 13:37	1
Heptachlor epoxide	ND		0.0051	0.0025	ug/L		01/24/17 12:17	01/26/17 13:37	1
Toxaphene	ND		0.51	0.25	ug/L		01/24/17 12:17	01/26/17 13:37	1
4,4'-DDD	ND		0.0051	0.0040	ug/L		01/24/17 12:17	01/26/17 13:37	1
4,4'-DDE	ND		0.0051	0.0030	ug/L		01/24/17 12:17	01/26/17 13:37	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 13:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	35		10 - 150	01/24/17 12:17	01/26/17 13:37	1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	0.29	J,DX	1.0	0.25	ug/L			01/24/17 07:30	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.5		0.50	0.25	mg/L			01/24/17 02:09	1
Nitrate as N	0.98		0.11	0.055	mg/L			01/24/17 02:09	1
Fluoride	ND		0.50	0.25	mg/L			01/24/17 02:09	1
Nitrite as N	ND		0.15	0.070	mg/L			01/24/17 02:09	1
Sulfate	120		25	13	mg/L			01/24/17 15:41	50

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 10:40	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.98		0.15	0.070	mg/L			01/31/17 14:09	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,7,8-PeCDD	ND		0.000052	0.0000005	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,7,8-PeCDF	0.00000090	J,DX q	0.000052	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:52	1
2,3,4,7,8-PeCDF	ND		0.000052	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,4,7,8-HxCDD	0.00000085	J,DX q	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,6,7,8-HxCDD	0.00000090	J,DX q	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,7,8,9-HxCDD	0.0000013	J,DX	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,4,7,8-HxCDF	0.0000012	J,DX	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,6,7,8-HxCDF	0.00000093	J,DX	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,7,8,9-HxCDF	0.00000095	J,DX	0.000052	0.0000002	ug/L		01/26/17 12:45	01/28/17 12:52	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	0.0000011	J,DX	0.000052	0.0000002	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,4,6,7,8-HpCDD	0.0000067	J,DX MB	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,4,6,7,8-HpCDF	0.0000023	J,DX MB	0.000052	0.0000002	ug/L		01/26/17 12:45	01/28/17 12:52	1
1,2,3,4,7,8,9-HpCDF	0.0000014	J,DX MB	0.000052	0.0000002	ug/L		01/26/17 12:45	01/28/17 12:52	1
OCDD	0.000050	J,DX MB	0.00010	0.0000005	ug/L		01/26/17 12:45	01/28/17 12:52	1
OCDF	0.0000040	J,DX MB	0.00010	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total TCDD	ND		0.000010	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total TCDF	0.0000074	J,DX q	0.000010	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total PeCDD	ND		0.000052	0.0000005	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total PeCDF	0.0000090	J,DX q	0.000052	0.0000004	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total HxCDD	0.0000049	J,DX q	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total HxCDF	0.0000042	J,DX	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total HpCDD	0.000019	J,DX MB	0.000052	0.0000003	ug/L		01/26/17 12:45	01/28/17 12:52	1
Total HpCDF	0.0000054	J,DX MB	0.000052	0.0000002	ug/L		01/26/17 12:45	01/28/17 12:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	75		25 - 164	01/26/17 12:45	01/28/17 12:52	1
13C-2,3,7,8-TCDF	67		24 - 169	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,7,8-PeCDD	82		25 - 181	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,7,8-PeCDF	70		24 - 185	01/26/17 12:45	01/28/17 12:52	1
13C-2,3,4,7,8-PeCDF	72		21 - 178	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,6,7,8-HxCDD	75		28 - 130	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,4,7,8-HxCDF	68		26 - 152	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,6,7,8-HxCDF	65		26 - 123	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,7,8,9-HxCDF	68		29 - 147	01/26/17 12:45	01/28/17 12:52	1
13C-2,3,4,6,7,8-HxCDF	67		28 - 136	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,4,6,7,8-HpCDD	90		23 - 140	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,4,6,7,8-HpCDF	73		28 - 143	01/26/17 12:45	01/28/17 12:52	1
13C-1,2,3,4,7,8,9-HpCDF	85		26 - 138	01/26/17 12:45	01/28/17 12:52	1
13C-OCDD	107		17 - 157	01/26/17 12:45	01/28/17 12:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	91		35 - 197	01/26/17 12:45	01/28/17 12:52	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000011	ug/L		01/26/17 12:45	01/30/17 20:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	58		24 - 169	01/26/17 12:45	01/30/17 20:20	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/26/17 12:45	01/30/17 20:20	1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:41	1
Boron	0.056		0.050	0.025	mg/L		01/27/17 14:58	02/01/17 12:41	1
Barium	0.022		0.010	0.0050	mg/L		01/27/17 14:58	02/01/17 12:41	1
Beryllium	ND		2.0	1.0	ug/L		01/27/17 14:58	02/01/17 12:41	1
Cobalt	ND		10	2.5	ug/L		01/27/17 14:58	02/01/17 12:41	1
Chromium	ND		5.0	2.5	ug/L		01/27/17 14:58	02/01/17 12:41	1
Iron	0.098	J,DX	0.10	0.050	mg/L		01/27/17 14:58	02/01/17 12:41	1
Manganese	14	J,DX	20	10	ug/L		01/27/17 14:58	02/01/17 12:41	1
Nickel	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:41	1
Vanadium	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:41	1
Zinc	44		20	10	ug/L		01/27/17 14:58	02/01/17 12:41	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/30/17 13:58	02/01/17 12:15	1
Copper	1.7	J,DX	2.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:15	1
Lead	ND		1.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:15	1
Antimony	0.51	J,DX	2.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:15	1
Selenium	ND		2.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:15	1
Thallium	ND		1.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:15	1
Silver	ND		1.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:15	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:32	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	120		0.33	0.17	mg/L			02/02/17 13:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	2.4		0.10	0.040	NTU			01/24/17 13:01	1
Monomethyl Hydrazine	ND	BU	10	0.25	ug/L		01/25/17 20:23	02/04/17 03:25	1
Total Dissolved Solids	250		10	5.0	mg/L			01/26/17 08:19	1
Total Suspended Solids	4.3		1.7	0.83	mg/L			01/27/17 16:36	1
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1
Ammonia (as N)	ND		0.200	0.100	mg/L			01/26/17 21:53	1
Total Organic Carbon	5.6		1.0	0.65	mg/L			01/24/17 19:22	1
Methylene Blue Active Substances	0.11		0.10	0.050	mg/L			01/23/17 21:55	1
Biochemical Oxygen Demand	1.6	J,DX	2.0	0.50	mg/L			01/24/17 15:15	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp_F

Lab Sample ID: 440-174317-2

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 200.7 Rev 4.4 - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND	QP	10	5.0	ug/L		01/31/17 16:30	02/02/17 10:27	1
Boron	0.057	QP	0.050	0.025	mg/L		01/31/17 16:30	02/02/17 10:27	1
Barium	0.023	QP	0.010	0.0050	mg/L		01/31/17 16:30	02/02/17 10:27	1
Beryllium	ND	QP	2.0	1.0	ug/L		01/31/17 16:30	02/02/17 10:27	1
Cobalt	ND	QP	10	2.5	ug/L		01/31/17 16:30	02/02/17 10:27	1
Chromium	ND	QP	5.0	2.5	ug/L		01/31/17 16:30	02/02/17 10:27	1
Iron	ND	QP	0.10	0.050	mg/L		01/31/17 16:30	02/02/17 10:27	1
Manganese	ND	QP	20	10	ug/L		01/31/17 16:30	02/02/17 10:27	1
Nickel	ND	QP	10	5.0	ug/L		01/31/17 16:30	02/02/17 10:27	1
Vanadium	ND	QP	10	5.0	ug/L		01/31/17 16:30	02/02/17 10:27	1
Zinc	63	MB QP	20	10	ug/L		01/31/17 16:30	02/02/17 10:27	1

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		01/31/17 16:32	02/02/17 11:26	1
Copper	1.8	J,DX QP	2.0	0.50	ug/L		01/31/17 16:32	02/04/17 15:45	1
Lead	ND	QP	1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:26	1
Antimony	ND	QP	2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:26	1
Selenium	ND	QP	2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:26	1
Thallium	ND	QP	1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:26	1
Silver	ND	QP	1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:26	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:20	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	130		0.33	0.17	mg/L			02/06/17 01:36	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method	Method Description	Protocol	Laboratory
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 PCB LL	Polychlorinated Biphenyls (PCBs) Low level	40CFR136A	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
218.6	Chromium, Hexavalent (Ion Chromatography)	EPA	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.7 Rev 4.4	Metals (ICP)	EPA	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
DV-WC-0077	Hydrazine, Ion Chromatography	TAL-DEN	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5310B	Organic Carbon, Total (TOC)	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	10 mL	10 mL	385626	01/31/17 23:37	GK	TAL IRV
Total/NA	Prep	625			890 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			384955	01/27/17 23:57	DF	TAL IRV
Total/NA	Prep	625			890 mL	2 mL	384349	01/25/17 13:07	AP	TAL IRV
Total/NA	Analysis	625		1			385461	01/31/17 16:02	DF	TAL IRV
Total/NA	Prep	608			990 mL	2 mL	384080	01/24/17 12:17	JC1	TAL IRV
Total/NA	Analysis	608 PCB LL		1			384312	01/25/17 14:49	JM	TAL IRV
Total/NA	Prep	608			990 mL	2 mL	384080	01/24/17 12:17	JC1	TAL IRV
Total/NA	Analysis	608 Pesticides		1			384572	01/26/17 13:37	KS	TAL IRV
Total/NA	Analysis	218.6		1			383968	01/24/17 07:30	MN	TAL IRV
Total/NA	Analysis	300.0		1			383771	01/24/17 02:09	NTN	TAL IRV
Total/NA	Analysis	300.0		1			383772	01/24/17 02:09	NTN	TAL IRV
Total/NA	Analysis	300.0		50			384058	01/24/17 15:41	NTN	TAL IRV
Total/NA	Analysis	314.0		1			383991	01/24/17 10:40	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			385518	01/31/17 14:09	NN	TAL IRV
Total/NA	Prep	1613B			956.9 mL	20 uL	147877	01/26/17 12:45	DXD	TAL SAC
Total/NA	Analysis	1613B		1			148159	01/28/17 12:52	SMA	TAL SAC
Total/NA	Prep	1613B	RA		956.9 mL	20 uL	147877	01/26/17 12:45	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			148329	01/30/17 20:20	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	384923	01/27/17 14:58	Q1N	TAL IRV
Total Recoverable	Analysis	200.7 Rev 4.4		1			385783	02/01/17 12:41	VS	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	385235	01/30/17 13:58	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			385814	02/01/17 12:15	IH1	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	384111	01/24/17 14:19	DB	TAL IRV
Total/NA	Analysis	245.1		1			384220	01/24/17 21:32	DB	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			386100	02/02/17 13:27	A1S	TAL IRV
Total/NA	Analysis	180.1		1			384088	01/24/17 13:01	ST	TAL IRV
Total/NA	Prep	Filtration			30 mL	30 mL	360047	01/25/17 20:23	MPS	TAL DEN
Total/NA	Analysis	DV-WC-0077		1	4.5 mL	5 mL	361024	02/04/17 03:25	MPS	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	384516	01/26/17 08:19	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	600 mL	1000 mL	384939	01/27/17 16:36	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	384650	01/26/17 15:00	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			384744	01/26/17 20:29	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	384765	01/26/17 21:53	EN	TAL IRV
Total/NA	Analysis	SM 5310B		1			384224	01/24/17 19:22	YZ	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	383953	01/23/17 21:55	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			384132	01/24/17 15:15	MMP	TAL IRV

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Client Sample ID: Outfall018_20170123_Comp_F

Lab Sample ID: 440-174317-2

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			250 mL	250 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385576	01/31/17 16:30	Q1N	TAL IRV
Dissolved	Analysis	200.7 Rev 4.4		1			386053	02/02/17 10:27	VS	TAL IRV
Dissolved	Filtration	FILTRATION			250 mL	250 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385577	01/31/17 16:32	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386210	02/02/17 11:26	IH1	TAL IRV
Dissolved	Filtration	FILTRATION			250 mL	250 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	385577	01/31/17 16:32	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			386564	02/04/17 15:45	RC	TAL IRV
Dissolved	Filtration	FILTRATION			250 mL	250 mL	384878	01/27/17 11:57	DT	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	384941	01/27/17 16:45	DB	TAL IRV
Dissolved	Analysis	245.1		1			385549	01/31/17 14:20	DB	TAL IRV
Dissolved	Analysis	SM 2340B		1			386100	02/06/17 01:36	A1S	TAL IRV

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-385626/2
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.0	0.50	ug/L			01/31/17 22:07	1
Surrogate	%Recovery	MB Qualifier	Limits			D	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	83		80 - 120					01/31/17 22:07	1

Lab Sample ID: LCS 440-385626/3
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	10.0	8.66		ug/L		87	70 - 125
Surrogate	%Recovery	LCS Qualifier	Limits			D	%Rec. Limits
Dibromofluoromethane (Surr)	85		80 - 120				

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	ND		10.0	9.08		ug/L		91	70 - 130
Surrogate	%Recovery	MS Qualifier	Limits			D	%Rec	%Rec. Limits	
Dibromofluoromethane (Surr)	87		80 - 120						

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 385626

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		10.0	9.17		ug/L		92	70 - 130	1	30
Surrogate	%Recovery	MSD Qualifier	Limits			D	%Rec	%Rec. Limits	RPD	RPD Limit	
Dibromofluoromethane (Surr)	89		80 - 120								

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Acenaphthylene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Anthracene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[a]anthracene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[b]fluoranthene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzo[k]fluoranthene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[a]pyrene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-chloroethoxy)methane	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-chloroethyl)ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Bromophenyl phenyl ether	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Butyl benzyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Chloro-3-methylphenol	ND		2.00	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Chloronaphthalene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Chlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Chlorophenyl phenyl ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Chrysene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Dibenz(a,h)anthracene	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
Di-n-butyl phthalate	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,2-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,3-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,4-Dichlorobenzene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
3,3'-Dichlorobenzidine	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dichlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Diethyl phthalate	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dimethylphenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Dimethyl phthalate	ND		0.500	0.250	ug/L		01/25/17 13:07	01/27/17 18:46	1
4,6-Dinitro-2-methylphenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,6-Dinitrotoluene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Di-n-octyl phthalate	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Fluoranthene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Fluorene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorobutadiene	ND		2.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachloroethane	ND		3.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Hexachlorocyclopentadiene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Indeno[1,2,3-cd]pyrene	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Isophorone	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Naphthalene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2-Nitrophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
4-Nitrophenol	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodiphenylamine	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
N-Nitrosodi-n-propylamine	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pentachlorophenol	ND		2.00	1.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
Phenanthrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1
Phenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Pyrene	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		01/25/17 13:07	01/27/17 18:46	1
Benzo[g,h,i]perylene	ND		5.00	2.00	ug/L		01/25/17 13:07	01/27/17 18:46	1
bis (2-chloroisopropyl) ether	ND		0.500	0.200	ug/L		01/25/17 13:07	01/27/17 18:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	76		50 - 120	01/25/17 13:07	01/27/17 18:46	1
2-Fluorophenol	63		30 - 120	01/25/17 13:07	01/27/17 18:46	1
2,4,6-Tribromophenol	61		40 - 120	01/25/17 13:07	01/27/17 18:46	1
Nitrobenzene-d5	74		45 - 120	01/25/17 13:07	01/27/17 18:46	1
Terphenyl-d14	84		37 - 144	01/25/17 13:07	01/27/17 18:46	1
Phenol-d6	60		35 - 120	01/25/17 13:07	01/27/17 18:46	1

Lab Sample ID: MB 440-384349/1-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384349

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzydine	ND		10.0	5.00	ug/L		01/25/17 13:07	01/31/17 11:36	1

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	10.0	8.699		ug/L		87	47 - 145
Acenaphthylene	10.0	8.792		ug/L		88	33 - 145
Anthracene	10.0	9.061		ug/L		91	27 - 133
Benzo[a]anthracene	10.0	9.405		ug/L		94	33 - 143
Benzo[b]fluoranthene	10.0	10.13		ug/L		101	24 - 150
Benzo[k]fluoranthene	10.0	10.30		ug/L		103	11 - 150
Benzo[a]pyrene	10.0	9.474		ug/L		95	17 - 150
Bis(2-chloroethoxy)methane	10.0	8.683		ug/L		87	33 - 150
Bis(2-chloroethyl)ether	10.0	8.118		ug/L		81	12 - 150
Bis(2-ethylhexyl) phthalate	10.0	9.786		ug/L		98	10 - 150
4-Bromophenyl phenyl ether	10.0	9.113		ug/L		91	53 - 127
Butyl benzyl phthalate	10.0	9.813		ug/L		98	10 - 150
4-Chloro-3-methylphenol	10.0	8.756		ug/L		88	22 - 147
2-Chloronaphthalene	10.0	8.439		ug/L		84	60 - 118
2-Chlorophenol	10.0	7.747		ug/L		77	23 - 134
4-Chlorophenyl phenyl ether	10.0	8.705		ug/L		87	25 - 150
Chrysene	10.0	9.279		ug/L		93	17 - 150
Dibenz(a,h)anthracene	10.0	8.943		ug/L		89	10 - 150
Di-n-butyl phthalate	10.0	9.604		ug/L		96	10 - 118
1,2-Dichlorobenzene	10.0	7.170		ug/L		72	32 - 129
1,3-Dichlorobenzene	10.0	7.006		ug/L		70	10 - 150
1,4-Dichlorobenzene	10.0	6.948		ug/L		69	20 - 124
3,3'-Dichlorobenzidine	10.0	7.184		ug/L		72	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	10.0	8.406		ug/L		84	39 - 135
Diethyl phthalate	10.0	9.214		ug/L		92	10 - 114
2,4-Dimethylphenol	10.0	7.287		ug/L		73	32 - 119
Dimethyl phthalate	10.0	9.256		ug/L		93	10 - 112
4,6-Dinitro-2-methylphenol	20.0	16.77		ug/L		84	10 - 150
2,4-Dinitrophenol	20.0	16.45		ug/L		82	50 - 150
2,4-Dinitrotoluene	10.0	8.982		ug/L		90	39 - 139
2,6-Dinitrotoluene	10.0	9.127		ug/L		91	50 - 150
Di-n-octyl phthalate	10.0	9.560		ug/L		96	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.1	9.133		ug/L		90	47 - 116
Fluoranthene	10.0	9.346		ug/L		93	26 - 137
Fluorene	10.0	8.966		ug/L		90	59 - 121
Hexachlorobenzene	10.0	8.727		ug/L		87	10 - 150
Hexachlorobutadiene	10.0	7.138		ug/L		71	24 - 116
Hexachloroethane	10.0	6.722		ug/L		67	40 - 113
Hexachlorocyclopentadiene	10.0	3.657	J,DX	ug/L		37	10 - 67
Indeno[1,2,3-cd]pyrene	10.0	8.746		ug/L		87	10 - 150
Isophorone	10.0	8.847		ug/L		88	21 - 150
Naphthalene	10.0	7.924		ug/L		79	21 - 133
Nitrobenzene	10.0	8.346		ug/L		83	35 - 150
2-Nitrophenol	10.0	8.193		ug/L		82	29 - 150
4-Nitrophenol	20.0	17.82		ug/L		89	10 - 132
N-Nitrosodimethylamine	10.0	7.600		ug/L		76	26 - 117
N-Nitrosodiphenylamine	10.0	7.969		ug/L		80	54 - 110
N-Nitrosodi-n-propylamine	10.0	8.502		ug/L		85	10 - 150
Pentachlorophenol	20.0	17.38		ug/L		87	14 - 150
Phenanthrene	10.0	9.043		ug/L		90	54 - 120
Phenol	10.0	7.992		ug/L		80	10 - 112
Pyrene	10.0	9.129		ug/L		91	52 - 115
1,2,4-Trichlorobenzene	10.0	7.466		ug/L		75	44 - 142
2,4,6-Trichlorophenol	10.0	9.411		ug/L		94	37 - 144
Benzo[g,h,i]perylene	10.0	8.816		ug/L		88	10 - 150
bis (2-chloroisopropyl) ether	10.0	7.991		ug/L		80	47 - 103

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	84		50 - 120
2-Fluorophenol	74		30 - 120
2,4,6-Tribromophenol	91		40 - 120
Nitrobenzene-d5	83		45 - 120
Terphenyl-d14	94		37 - 144
Phenol-d6	81		35 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-384349/2-A
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzidine	10.0	6.553	J,DX	ug/L		66	5 - 66

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	ND		10.0	6.461		ug/L		65	47 - 145
Acenaphthylene	ND		10.0	6.521		ug/L		65	33 - 145
Anthracene	ND		10.0	6.022		ug/L		60	27 - 133
Benzo[a]anthracene	ND		10.0	7.019		ug/L		70	33 - 143
Benzo[b]fluoranthene	ND		10.0	7.517		ug/L		75	24 - 150
Benzo[k]fluoranthene	ND		10.0	7.382		ug/L		74	11 - 150
Benzo[a]pyrene	ND		10.0	6.823		ug/L		68	17 - 150
Bis(2-chloroethoxy)methane	ND		10.0	6.218		ug/L		62	33 - 150
Bis(2-chloroethyl)ether	ND		10.0	6.465		ug/L		65	12 - 150
Bis(2-ethylhexyl) phthalate	ND		10.0	7.735		ug/L		77	10 - 150
4-Bromophenyl phenyl ether	ND		10.0	6.670		ug/L		67	53 - 127
Butyl benzyl phthalate	ND		10.0	7.826		ug/L		78	10 - 150
4-Chloro-3-methylphenol	ND		10.0	6.600		ug/L		66	22 - 147
2-Chloronaphthalene	ND		10.0	6.432		ug/L		64	60 - 118
2-Chlorophenol	ND		10.0	5.663		ug/L		57	23 - 134
4-Chlorophenyl phenyl ether	ND		10.0	6.564		ug/L		66	25 - 150
Chrysene	ND		10.0	6.851		ug/L		69	17 - 150
Dibenz(a,h)anthracene	ND		10.0	6.032		ug/L		60	10 - 150
Di-n-butyl phthalate	ND		10.0	7.251		ug/L		73	10 - 118
1,2-Dichlorobenzene	ND		10.0	5.765		ug/L		58	32 - 129
1,3-Dichlorobenzene	ND		10.0	5.720		ug/L		57	10 - 150
1,4-Dichlorobenzene	ND		10.0	5.566		ug/L		56	20 - 124
3,3'-Dichlorobenzidine	ND		10.0	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		10.0	5.979		ug/L		60	39 - 135
Diethyl phthalate	ND		10.0	7.009		ug/L		70	10 - 114
2,4-Dimethylphenol	ND		10.0	6.174		ug/L		62	32 - 119
Dimethyl phthalate	ND		10.0	6.897		ug/L		69	10 - 112
4,6-Dinitro-2-methylphenol	ND		20.0	14.24		ug/L		71	10 - 150
2,4-Dinitrophenol	ND		20.0	15.24		ug/L		76	50 - 150
2,4-Dinitrotoluene	ND		10.0	6.912		ug/L		69	39 - 139
2,6-Dinitrotoluene	ND		10.0	6.879		ug/L		69	50 - 150
Di-n-octyl phthalate	ND		10.0	7.826		ug/L		78	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.1	6.353		ug/L		63	60 - 120
Fluoranthene	ND		10.0	7.125		ug/L		71	26 - 137
Fluorene	ND		10.0	6.816		ug/L		68	59 - 121
Hexachlorobenzene	ND		10.0	6.321		ug/L		63	10 - 150
Hexachlorobutadiene	ND		10.0	5.467		ug/L		55	24 - 116
Hexachloroethane	ND		10.0	5.572		ug/L		56	40 - 113
Hexachlorocyclopentadiene	ND		10.0	4.082	J,DX	ug/L		41	25 - 120
Indeno[1,2,3-cd]pyrene	ND		10.0	5.982		ug/L		60	10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-1 MS

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Outfall018_20170123_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Isophorone	ND		10.0	6.855		ug/L		69		21 - 150
Naphthalene	ND		10.0	6.045		ug/L		60		21 - 133
Nitrobenzene	ND		10.0	6.732		ug/L		67		35 - 150
2-Nitrophenol	ND		10.0	6.485		ug/L		65		29 - 150
4-Nitrophenol	ND		20.0	14.00		ug/L		70		10 - 132
N-Nitrosodimethylamine	ND		10.0	6.119		ug/L		61		12 - 123
N-Nitrosodiphenylamine	ND		10.0	5.167	LN	ug/L		52		60 - 120
N-Nitrosodi-n-propylamine	ND		10.0	6.434		ug/L		64		10 - 150
Pentachlorophenol	ND		20.0	14.91		ug/L		75		14 - 150
Phenanthrene	ND		10.0	6.613		ug/L		66		54 - 120
Phenol	ND		10.0	5.573		ug/L		56		10 - 112
Pyrene	ND		10.0	6.765		ug/L		68		52 - 115
1,2,4-Trichlorobenzene	ND		10.0	5.857		ug/L		59		44 - 142
2,4,6-Trichlorophenol	ND		10.0	6.509		ug/L		65		37 - 144
Benzo[g,h,i]perylene	ND		10.0	5.616		ug/L		56		10 - 150
bis (2-chloroisopropyl) ether	ND		10.0	6.338		ug/L		63		45 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	48		30 - 120
2,4,6-Tribromophenol	68		40 - 120
Nitrobenzene-d5	63		45 - 120
Terphenyl-d14	70		37 - 144
Phenol-d6	57		35 - 120

Lab Sample ID: 440-174317-1 MS

Matrix: Water

Analysis Batch: 385461

Client Sample ID: Outfall018_20170123_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Benzidine	ND		10.0	ND	LN	ug/L		0		30 - 160

Lab Sample ID: 440-174317-1 MSD

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Outfall018_20170123_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier								
Acenaphthene	ND		10.1	8.086		ug/L		80		47 - 145	22		25
Acenaphthylene	ND		10.1	7.781		ug/L		77		33 - 145	18		25
Anthracene	ND		10.1	7.707		ug/L		77		27 - 133	25		25
Benzo[a]anthracene	ND		10.1	8.657	BA	ug/L		86		33 - 143	21		20
Benzo[b]fluoranthene	ND		10.1	10.10	BA	ug/L		101		24 - 150	29		25
Benzo[k]fluoranthene	ND		10.1	9.323		ug/L		93		11 - 150	23		30
Benzo[a]pyrene	ND		10.1	8.451		ug/L		84		17 - 150	21		25
Bis(2-chloroethoxy)methane	ND		10.1	5.616		ug/L		56		33 - 150	10		25
Bis(2-chloroethyl)ether	ND		10.1	7.762		ug/L		77		12 - 150	18		25
Bis(2-ethylhexyl) phthalate	ND		10.1	9.202		ug/L		92		10 - 150	17		25
4-Bromophenyl phenyl ether	ND		10.1	8.593		ug/L		85		53 - 127	25		25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-1 MSD

Matrix: Water

Analysis Batch: 384955

Client Sample ID: Outfall018_20170123_Comp

Prep Type: Total/NA

Prep Batch: 384349

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits		
Butyl benzyl phthalate	ND		10.1	9.372		ug/L		93	10 - 150	18	25
4-Chloro-3-methylphenol	ND		10.1	8.955	BA	ug/L		89	22 - 147	30	25
2-Chloronaphthalene	ND		10.1	7.996	BA	ug/L		80	60 - 118	22	20
2-Chlorophenol	ND		10.1	7.747	BA	ug/L		77	23 - 134	31	25
4-Chlorophenyl phenyl ether	ND		10.1	8.334		ug/L		83	25 - 150	24	25
Chrysene	ND		10.1	8.402		ug/L		84	17 - 150	20	25
Dibenz(a,h)anthracene	ND		10.1	6.518		ug/L		65	10 - 150	8	30
Di-n-butyl phthalate	ND		10.1	9.232		ug/L		92	10 - 118	24	25
1,2-Dichlorobenzene	ND		10.1	7.290		ug/L		73	32 - 129	23	25
1,3-Dichlorobenzene	ND		10.1	6.860		ug/L		68	10 - 150	18	25
1,4-Dichlorobenzene	ND		10.1	6.791		ug/L		68	20 - 124	20	25
3,3'-Dichlorobenzidine	ND		10.1	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		10.1	8.417	BA	ug/L		84	39 - 135	34	25
Diethyl phthalate	ND		10.1	9.052		ug/L		90	10 - 114	25	30
2,4-Dimethylphenol	ND		10.1	8.319	BA	ug/L		83	32 - 119	30	25
Dimethyl phthalate	ND		10.1	8.631		ug/L		86	10 - 112	22	30
4,6-Dinitro-2-methylphenol	ND		20.1	18.84	BA	ug/L		94	10 - 150	28	25
2,4-Dinitrophenol	ND		20.1	22.61	BA	ug/L		112	50 - 150	39	25
2,4-Dinitrotoluene	ND		10.1	8.934	BA	ug/L		89	39 - 139	26	25
2,6-Dinitrotoluene	ND		10.1	9.206	BA	ug/L		92	50 - 150	29	20
Di-n-octyl phthalate	ND		10.1	9.203		ug/L		92	10 - 146	16	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		10.2	2.243	LN BA	ug/L		22	60 - 120	96	25
Fluoranthene	ND		10.1	9.121		ug/L		91	26 - 137	25	25
Fluorene	ND		10.1	8.677		ug/L		86	59 - 121	24	25
Hexachlorobenzene	ND		10.1	8.069		ug/L		80	10 - 150	24	25
Hexachlorobutadiene	ND		10.1	6.794		ug/L		68	24 - 116	22	25
Hexachloroethane	ND		10.1	6.911		ug/L		69	40 - 113	21	25
Hexachlorocyclopentadiene	ND		10.1	5.312		ug/L		53	25 - 120	26	30
Indeno[1,2,3-cd]pyrene	ND		10.1	7.094		ug/L		71	10 - 150	17	30
Isophorone	ND		10.1	8.819		ug/L		88	21 - 150	25	25
Naphthalene	ND		10.1	7.785		ug/L		77	21 - 133	25	25
Nitrobenzene	ND		10.1	9.210	BA	ug/L		92	35 - 150	31	25
2-Nitrophenol	ND		10.1	9.106	BA	ug/L		91	29 - 150	34	25
4-Nitrophenol	ND		20.1	19.29	BA	ug/L		96	10 - 132	32	30
N-Nitrosodimethylamine	ND		10.1	7.765		ug/L		77	12 - 123	24	35
N-Nitrosodiphenylamine	ND		10.1	3.428	LN BA	ug/L		34	60 - 120	40	25
N-Nitrosodi-n-propylamine	ND		10.1	8.430	BA	ug/L		84	10 - 150	27	25
Pentachlorophenol	ND		20.1	20.39	BA	ug/L		101	14 - 150	31	25
Phenanthrene	ND		10.1	8.409		ug/L		84	54 - 120	24	25
Phenol	ND		10.1	7.344	BA	ug/L		73	10 - 112	27	25
Pyrene	ND		10.1	8.417		ug/L		84	52 - 115	22	25
1,2,4-Trichlorobenzene	ND		10.1	7.274	BA	ug/L		72	44 - 142	22	20
2,4,6-Trichlorophenol	ND		10.1	8.926	BA	ug/L		89	37 - 144	31	30
Benzo[g,h,i]perylene	ND		10.1	6.619		ug/L		66	10 - 150	16	30
bis (2-chloroisopropyl) ether	ND		10.1	7.821		ug/L		78	45 - 120	21	25

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 384955

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384349

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	80		50 - 120
2-Fluorophenol	75		30 - 120
2,4,6-Tribromophenol	92		40 - 120
Nitrobenzene-d5	81		45 - 120
Terphenyl-d14	85		37 - 144
Phenol-d6	79		35 - 120

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 385461

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384349

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzidine	ND		10.1	ND	LN	ug/L		0	30 - 160	NC	35

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level

Lab Sample ID: MB 440-384080/1-A
Matrix: Water
Analysis Batch: 384312

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384080

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor 1016	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1221	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1232	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1242	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1248	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1254	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1
Aroclor 1260	ND		0.50	0.25	ug/L		01/24/17 12:17	01/25/17 12:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	72		29 - 115	01/24/17 12:17	01/25/17 12:58	1

Lab Sample ID: LCS 440-384080/5-B
Matrix: Water
Analysis Batch: 384312

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor 1016	4.00	3.81		ug/L		95	50 - 115
Aroclor 1260	4.00	3.94		ug/L		99	10 - 127

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	4	LG	29 - 115

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 608 PCB LL - Polychlorinated Biphenyls (PCBs) Low level (Continued)

Lab Sample ID: 440-174317-1 MS

Matrix: Water
Analysis Batch: 384312

Client Sample ID: Outfall018_20170123_Comp

Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Aroclor 1016	ND		3.79	2.63		ug/L		69	45 - 120
Aroclor 1260	ND		3.79	3.42		ug/L		90	55 - 125
MS MS									
Surrogate	%Recovery		Qualifier	Limits					
DCB Decachlorobiphenyl (Surr)	46			29 - 115					

Lab Sample ID: 440-174317-1 MSD

Matrix: Water
Analysis Batch: 384312

Client Sample ID: Outfall018_20170123_Comp

Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Aroclor 1016	ND		3.81	2.60		ug/L		68	45 - 120	1	30
Aroclor 1260	ND		3.81	3.49		ug/L		92	55 - 125	2	25
MSD MSD											
Surrogate	%Recovery		Qualifier	Limits							
DCB Decachlorobiphenyl (Surr)	45			29 - 115							

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-384080/1-A

Matrix: Water
Analysis Batch: 384572

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 384080

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aldrin	ND		0.0050	0.0015	ug/L		01/24/17 12:17	01/26/17 12:38	1
alpha-BHC	ND		0.0050	0.0025	ug/L		01/24/17 12:17	01/26/17 12:38	1
beta-BHC	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
Chlordane (technical)	ND		0.10	0.080	ug/L		01/24/17 12:17	01/26/17 12:38	1
delta-BHC	ND		0.0050	0.0035	ug/L		01/24/17 12:17	01/26/17 12:38	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan I	ND		0.0050	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan II	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endrin	ND		0.0050	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		01/24/17 12:17	01/26/17 12:38	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Heptachlor	ND		0.010	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		01/24/17 12:17	01/26/17 12:38	1
Toxaphene	ND		0.50	0.25	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/24/17 12:17	01/26/17 12:38	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/24/17 12:17	01/26/17 12:38	1
MB MB									
Surrogate	%Recovery		Qualifier	Limits		Prepared	Analyzed	Dil Fac	
Tetrachloro-m-xylene	66			10 - 150		01/24/17 12:17	01/26/17 12:38	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCS 440-384080/2-A
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Aldrin	0.200	0.107		ug/L		53	42 - 122
alpha-BHC	0.200	0.147		ug/L		73	37 - 134
beta-BHC	0.200	0.127		ug/L		63	17 - 147
delta-BHC	0.200	0.145		ug/L		72	19 - 140
Dieldrin	0.200	0.160		ug/L		80	36 - 146
Endosulfan I	0.200	0.157		ug/L		79	45 - 150
Endosulfan II	0.200	0.158		ug/L		79	10 - 150
Endosulfan sulfate	0.200	0.158		ug/L		79	26 - 144
Endrin	0.200	0.163		ug/L		82	30 - 147
Endrin aldehyde	0.200	0.157		ug/L		78	47 - 115
gamma-BHC (Lindane)	0.200	0.161		ug/L		80	32 - 127
Heptachlor	0.200	0.157		ug/L		79	34 - 115
Heptachlor epoxide	0.200	0.172		ug/L		86	37 - 142
4,4'-DDD	0.200	0.150		ug/L		75	31 - 141
4,4'-DDE	0.200	0.149		ug/L		75	30 - 145
4,4'-DDT	0.200	0.174		ug/L		87	25 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	66		10 - 150

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Aldrin	ND		0.191	0.0921		ug/L		48	35 - 120
alpha-BHC	ND		0.191	0.103		ug/L		54	40 - 120
beta-BHC	ND		0.191	0.0926	LN	ug/L		48	50 - 120
delta-BHC	ND		0.191	0.0990		ug/L		52	50 - 120
Dieldrin	ND		0.191	0.104		ug/L		54	50 - 120
Endosulfan I	ND		0.191	0.100		ug/L		52	50 - 120
Endosulfan II	ND		0.191	0.106		ug/L		56	50 - 125
Endosulfan sulfate	ND		0.191	0.106		ug/L		55	55 - 125
Endrin	ND		0.191	0.111		ug/L		58	50 - 120
Endrin aldehyde	ND		0.191	0.110		ug/L		57	45 - 125
gamma-BHC (Lindane)	ND		0.191	0.112		ug/L		58	40 - 120
Heptachlor	ND		0.191	0.109		ug/L		57	40 - 120
Heptachlor epoxide	ND		0.191	0.115		ug/L		60	50 - 120
4,4'-DDD	ND		0.191	0.100		ug/L		52	50 - 125
4,4'-DDE	ND		0.191	0.0941		ug/L		49	45 - 125
4,4'-DDT	ND		0.191	0.113		ug/L		59	50 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
Tetrachloro-m-xylene	47		10 - 150

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 384572

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384080

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Aldrin	ND		0.204	0.104		ug/L		51		35 - 120	12	30
alpha-BHC	ND		0.204	0.121		ug/L		59		40 - 120	16	30
beta-BHC	ND		0.204	0.108		ug/L		53		50 - 120	15	30
delta-BHC	ND		0.204	0.113		ug/L		55		50 - 120	13	30
Dieldrin	ND		0.204	0.126		ug/L		62		50 - 120	19	30
Endosulfan I	ND		0.204	0.116		ug/L		57		50 - 120	14	30
Endosulfan II	ND		0.204	0.125		ug/L		61		50 - 125	16	30
Endosulfan sulfate	ND		0.204	0.120		ug/L		59		55 - 125	12	30
Endrin	ND		0.204	0.129		ug/L		63		50 - 120	15	30
Endrin aldehyde	ND		0.204	0.132		ug/L		65		45 - 125	19	30
gamma-BHC (Lindane)	ND		0.204	0.132		ug/L		65		40 - 120	17	30
Heptachlor	ND		0.204	0.128		ug/L		63		40 - 120	16	30
Heptachlor epoxide	ND		0.204	0.134		ug/L		66		50 - 120	15	30
4,4'-DDD	ND		0.204	0.119		ug/L		58		50 - 125	17	30
4,4'-DDE	ND		0.204	0.109		ug/L		53		45 - 125	15	30
4,4'-DDT	ND		0.204	0.133		ug/L		65		50 - 125	16	30
Surrogate		MSD	MSD									
		%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene		54		10 - 150								

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography)

Lab Sample ID: MB 440-383968/3
Matrix: Water
Analysis Batch: 383968

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Chromium, hexavalent	ND		1.0	0.25	ug/L			01/24/17 06:13		1

Lab Sample ID: LCS 440-383968/2
Matrix: Water
Analysis Batch: 383968

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
	Added	Result	Qualifier					
Chromium, hexavalent	50.0	50.7		ug/L		101		90 - 110

Lab Sample ID: MRL 440-383968/4
Matrix: Water
Analysis Batch: 383968

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike	MRL	MRL	Unit	D	%Rec	%Rec.	Limits
	Added	Result	Qualifier					
Chromium, hexavalent	1.00	1.23		ug/L		123		50 - 150

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 218.6 - Chromium, Hexavalent (Ion Chromatography) (Continued)

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 383968

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	0.29	J,DX	50.0	51.7		ug/L		103	90 - 110

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 383968

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	0.29	J,DX	50.0	51.2		ug/L		102	90 - 110	1	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-383771/4
Matrix: Water
Analysis Batch: 383771

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			01/23/17 12:06	1
Nitrite as N	ND		0.15	0.070	mg/L			01/23/17 12:06	1

Lab Sample ID: LCS 440-383771/2
Matrix: Water
Analysis Batch: 383771

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.16		mg/L		102	90 - 110
Nitrite as N	1.52	1.57		mg/L		103	90 - 110

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 383771

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.98		1.13	2.11		mg/L		100	80 - 120
Nitrite as N	ND		1.52	1.54		mg/L		101	80 - 120

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 383771

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.98		1.13	2.10		mg/L		99	80 - 120	0	20
Nitrite as N	ND		1.52	1.54		mg/L		101	80 - 120	0	20

Lab Sample ID: MB 440-383772/4
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			01/23/17 12:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 440-383772/4
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	ND		0.50	0.25	mg/L			01/23/17 12:06	1

Lab Sample ID: LCS 440-383772/2
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	5.07		mg/L		101	90 - 110
Fluoride	5.00	4.86		mg/L		97	90 - 110

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	6.5		5.00	11.5		mg/L		102	80 - 120
Fluoride	ND		5.00	4.75		mg/L		95	80 - 120

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 383772

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	6.5		5.00	11.5		mg/L		101	80 - 120	0	20
Fluoride	ND		5.00	4.77		mg/L		95	80 - 120	0	20

Lab Sample ID: MB 440-384058/4
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		0.50	0.25	mg/L			01/24/17 13:33	1

Lab Sample ID: LCS 440-384058/2
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	5.00		mg/L		100	90 - 110

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	120		250	363		mg/L		98	80 - 120

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 384058

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	120		250	364		mg/L		98	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-383991/3
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			01/24/17 09:22	1

Lab Sample ID: LCS 440-383991/2
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	24.0		ug/L		96	85 - 115

Lab Sample ID: MRL 440-383991/5
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.84	J,DX	ug/L		96	75 - 125

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	28.2		ug/L		113	80 - 120

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 383991

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	28.6		ug/L		114	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000007	ug/L		01/26/17 08:49	01/27/17 20:13	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-147877/1-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 147877

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-1,2,3,6,7,8-HxCDD	72		28 - 130	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,6,7,8-HxCDF	61		26 - 123	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,7,8,9-HxCDF	64		29 - 147	01/26/17 08:49	01/27/17 20:13	1
13C-2,3,4,6,7,8-HxCDF	63		28 - 136	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,6,7,8-HpCDF	69		28 - 143	01/26/17 08:49	01/27/17 20:13	1
13C-1,2,3,4,7,8,9-HpCDF	78		26 - 138	01/26/17 08:49	01/27/17 20:13	1
13C-OCDD	96		17 - 157	01/26/17 08:49	01/27/17 20:13	1
Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
%Recovery	Qualifier					
37Cl4-2,3,7,8-TCDD	88		35 - 197	01/26/17 08:49	01/27/17 20:13	1

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDF	0.000200	0.000201		ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00103		ug/L		103	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00101		ug/L		101	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000966		ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000922		ug/L		92	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00102		ug/L		102	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000945		ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000919		ug/L		92	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000982		ug/L		98	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000998		ug/L		100	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00102		ug/L		102	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000975	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000965	MB	ug/L		97	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000939	MB	ug/L		94	78 - 138
OCDD	0.00200	0.00189	MB	ug/L		94	78 - 144
OCDF	0.00200	0.00176	MB	ug/L		88	63 - 170
Isotope Dilution	LCS LCS		Limits				
%Recovery	Qualifier						
13C-2,3,7,8-TCDD	71		20 - 175				
13C-2,3,7,8-TCDF	65		22 - 152				
13C-1,2,3,7,8-PeCDD	77		21 - 227				
13C-1,2,3,7,8-PeCDF	67		21 - 192				
13C-2,3,4,7,8-PeCDF	75		13 - 328				
13C-1,2,3,4,7,8-HxCDD	77		21 - 193				
13C-1,2,3,6,7,8-HxCDD	72		25 - 163				
13C-1,2,3,4,7,8-HxCDF	67		19 - 202				
13C-1,2,3,6,7,8-HxCDF	63		21 - 159				
13C-1,2,3,7,8,9-HxCDF	67		17 - 205				
13C-2,3,4,6,7,8-HxCDF	64		22 - 176				

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-147877/2-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 147877

<i>Isotope Dilution</i>	LCS LCS		Limits
	%Recovery	Qualifier	
13C-1,2,3,4,6,7,8-HpCDD	88		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	75		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	84		20 - 186
13C-OCDD	103		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	90		31 - 191

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. RPD		RPD Limit
							Limits	RPD	
2,3,7,8-TCDD	0.000200	0.000202		ug/L		101	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000206		ug/L		103	75 - 158	3	50
1,2,3,7,8-PeCDD	0.00100	0.00107		ug/L		107	70 - 142	4	50
1,2,3,7,8-PeCDF	0.00100	0.00102		ug/L		102	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000979		ug/L		98	68 - 160	1	50
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.00106		ug/L		106	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000963		ug/L		96	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000970		ug/L		97	72 - 134	5	50
1,2,3,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	84 - 130	5	50
1,2,3,7,8,9-HxCDF	0.00100	0.00102		ug/L		102	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00103		ug/L		103	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00101	MB	ug/L		101	70 - 140	4	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00102	MB	ug/L		102	82 - 122	5	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000964	MB	ug/L		96	78 - 138	3	50
OCDD	0.00200	0.00192	MB	ug/L		96	78 - 144	2	50
OCDF	0.00200	0.00179	MB	ug/L		89	63 - 170	2	50

<i>Isotope Dilution</i>	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	66		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	71		21 - 227
13C-1,2,3,7,8-PeCDF	62		21 - 192
13C-2,3,4,7,8-PeCDF	67		13 - 328
13C-1,2,3,4,7,8-HxCDD	74		21 - 193
13C-1,2,3,6,7,8-HxCDD	67		25 - 163
13C-1,2,3,4,7,8-HxCDF	61		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	82		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	97		13 - 199

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-147877/3-A
Matrix: Water
Analysis Batch: 148158

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 147877

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	87		31 - 191

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 440-384923/1-A
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Boron	ND		0.050	0.025	mg/L		01/27/17 14:58	02/01/17 12:17	1
Barium	ND		0.010	0.0050	mg/L		01/27/17 14:58	02/01/17 12:17	1
Beryllium	ND		2.0	1.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Cobalt	ND		10	2.5	ug/L		01/27/17 14:58	02/01/17 12:17	1
Chromium	ND		5.0	2.5	ug/L		01/27/17 14:58	02/01/17 12:17	1
Iron	ND		0.10	0.050	mg/L		01/27/17 14:58	02/01/17 12:17	1
Manganese	ND		20	10	ug/L		01/27/17 14:58	02/01/17 12:17	1
Nickel	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Vanadium	ND		10	5.0	ug/L		01/27/17 14:58	02/01/17 12:17	1
Zinc	ND		20	10	ug/L		01/27/17 14:58	02/01/17 12:17	1

Lab Sample ID: LCS 440-384923/2-A
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Spike	LCS	LCS	Unit	D	%Rec	Limits
	Added	Result	Qualifier				%Rec.
Arsenic	500	489		ug/L		98	85 - 115
Boron	0.500	0.465		mg/L		93	85 - 115
Barium	0.500	0.482		mg/L		96	85 - 115
Beryllium	500	478		ug/L		96	85 - 115
Calcium	2.50	2.43		mg/L		97	85 - 115
Cobalt	500	481		ug/L		96	85 - 115
Chromium	500	505		ug/L		101	85 - 115
Iron	0.500	0.487		mg/L		97	85 - 115
Magnesium	2.50	2.42		mg/L		97	85 - 115
Manganese	500	508		ug/L		102	85 - 115
Nickel	500	485		ug/L		97	85 - 115
Vanadium	500	477		ug/L		95	85 - 115
Zinc	500	474		ug/L		95	85 - 115
Silver	250	225		ug/L		90	85 - 115

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				%Rec.
Arsenic	ND		500	505		ug/L		101	70 - 130
Boron	0.056		0.500	0.530		mg/L		95	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Barium	0.022		0.500	0.502		mg/L		96		70 - 130
Beryllium	ND		500	503		ug/L		101		70 - 130
Calcium	41		2.50	42.0	BB	mg/L		46		70 - 130
Cobalt	ND		500	484		ug/L		97		70 - 130
Chromium	ND		500	507		ug/L		101		70 - 130
Iron	0.098	J,DX	0.500	0.601		mg/L		101		70 - 130
Magnesium	5.1		2.50	7.44		mg/L		94		70 - 130
Manganese	14	J,DX	500	519		ug/L		101		70 - 130
Nickel	ND		500	513		ug/L		103		70 - 130
Vanadium	ND		500	490		ug/L		98		70 - 130
Zinc	44		500	486		ug/L		88		70 - 130
Silver	ND		250	228		ug/L		91		70 - 130

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 385783

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 384923

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Arsenic	ND		500	521		ug/L		104		70 - 130	3	20
Boron	0.056		0.500	0.544		mg/L		98		70 - 130	3	20
Barium	0.022		0.500	0.521		mg/L		100		70 - 130	4	20
Beryllium	ND		500	514		ug/L		103		70 - 130	2	20
Calcium	41		2.50	41.4	BB	mg/L		21		70 - 130	1	20
Cobalt	ND		500	501		ug/L		100		70 - 130	3	20
Chromium	ND		500	526		ug/L		105		70 - 130	4	20
Iron	0.098	J,DX	0.500	0.611		mg/L		103		70 - 130	2	20
Magnesium	5.1		2.50	7.49		mg/L		96		70 - 130	1	20
Manganese	14	J,DX	500	539		ug/L		105		70 - 130	4	20
Nickel	ND		500	533		ug/L		107		70 - 130	4	20
Vanadium	ND		500	510		ug/L		102		70 - 130	4	20
Zinc	44		500	506		ug/L		92		70 - 130	4	20
Silver	ND		250	236		ug/L		94		70 - 130	3	20

Lab Sample ID: MB 440-384878/1-D
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 385576

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	5.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Boron	ND		0.050	0.025	mg/L		01/31/17 16:30	02/02/17 10:23	1
Barium	ND		0.010	0.0050	mg/L		01/31/17 16:30	02/02/17 10:23	1
Beryllium	ND		2.0	1.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Cobalt	ND		10	2.5	ug/L		01/31/17 16:30	02/02/17 10:23	1
Chromium	ND		5.0	2.5	ug/L		01/31/17 16:30	02/02/17 10:23	1
Iron	ND		0.10	0.050	mg/L		01/31/17 16:30	02/02/17 10:23	1
Manganese	ND		20	10	ug/L		01/31/17 16:30	02/02/17 10:23	1
Nickel	ND		10	5.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Vanadium	ND		10	5.0	ug/L		01/31/17 16:30	02/02/17 10:23	1
Zinc	11.2	J,DX	20	10	ug/L		01/31/17 16:30	02/02/17 10:23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Lab Sample ID: LCS 440-384878/2-D
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	Limits
Arsenic	500	504		ug/L		101		85 - 115
Boron	0.500	0.482		mg/L		96		85 - 115
Barium	0.500	0.499		mg/L		100		85 - 115
Beryllium	500	498		ug/L		100		85 - 115
Calcium	2.50	2.62		mg/L		105		85 - 115
Cobalt	500	503		ug/L		101		85 - 115
Chromium	500	515		ug/L		103		85 - 115
Iron	0.500	0.518		mg/L		104		85 - 115
Magnesium	2.50	2.55		mg/L		102		85 - 115
Manganese	500	523		ug/L		105		85 - 115
Nickel	500	527		ug/L		105		85 - 115
Vanadium	500	493		ug/L		99		85 - 115
Zinc	500	499		ug/L		100		85 - 115
Silver	250	228		ug/L		91		85 - 115

Lab Sample ID: 440-174317-2 MS
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Outfall018_20170123_Comp_F
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec.	Limits
Arsenic	ND	QP	500	530		ug/L		106		70 - 130
Boron	0.057	QP	0.500	0.555		mg/L		99		70 - 130
Barium	0.023	QP	0.500	0.526		mg/L		101		70 - 130
Beryllium	ND	QP	500	524		ug/L		105		70 - 130
Calcium	44	QP	2.50	45.0	BB	mg/L		38		70 - 130
Cobalt	ND	QP	500	513		ug/L		103		70 - 130
Chromium	ND	QP	500	529		ug/L		106		70 - 130
Iron	ND	QP	0.500	0.547		mg/L		109		70 - 130
Magnesium	5.3	MB QP	2.50	7.68		mg/L		96		70 - 130
Manganese	ND	QP	500	535		ug/L		107		70 - 130
Nickel	ND	QP	500	510		ug/L		102		70 - 130
Vanadium	ND	QP	500	510		ug/L		102		70 - 130
Zinc	63	MB QP	500	513		ug/L		90		70 - 130
Silver	ND	QP	250	234		ug/L		93		70 - 130

Lab Sample ID: 440-174317-2 MSD
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Outfall018_20170123_Comp_F
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
Arsenic	ND	QP	500	534		ug/L		107		70 - 130	1	20
Boron	0.057	QP	0.500	0.562		mg/L		101		70 - 130	1	20
Barium	0.023	QP	0.500	0.530		mg/L		101		70 - 130	1	20
Beryllium	ND	QP	500	517		ug/L		103		70 - 130	1	20
Calcium	44	QP	2.50	46.0	BB	mg/L		78		70 - 130	2	20
Cobalt	ND	QP	500	515		ug/L		103		70 - 130	0	20
Chromium	ND	QP	500	533		ug/L		107		70 - 130	1	20
Iron	ND	QP	0.500	0.548		mg/L		110		70 - 130	0	20
Magnesium	5.3	MB QP	2.50	7.90		mg/L		105		70 - 130	3	20
Manganese	ND	QP	500	538		ug/L		108		70 - 130	1	20
Nickel	ND	QP	500	514		ug/L		103		70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 440-174317-2 MSD
Matrix: Water
Analysis Batch: 386053

Client Sample ID: Outfall018_20170123_Comp_F
Prep Type: Dissolved
Prep Batch: 385576

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	Limit
	Result	Qualifier		Result	Qualifier				Limits		
Vanadium	ND	QP	500	517		ug/L		103	70 - 130	1	20
Zinc	63	MB QP	500	518		ug/L		91	70 - 130	1	20
Silver	ND	QP	250	236		ug/L		94	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-385235/1-A
Matrix: Water
Analysis Batch: 385814

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385235

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		01/30/17 13:58	02/01/17 12:10	1
Copper	ND		2.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:10	1
Lead	ND		1.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:10	1
Antimony	ND		2.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:10	1
Selenium	ND		2.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:10	1
Thallium	ND		1.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:10	1
Silver	ND		1.0	0.50	ug/L		01/30/17 13:58	02/01/17 12:10	1

Lab Sample ID: LCS 440-385235/2-A
Matrix: Water
Analysis Batch: 385814

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385235

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.
		Result	Qualifier				Limits
Cadmium	80.0	72.4		ug/L		90	85 - 115
Copper	80.0	72.6		ug/L		91	85 - 115
Lead	80.0	71.0		ug/L		89	85 - 115
Antimony	80.0	81.5		ug/L		102	85 - 115
Selenium	80.0	71.7		ug/L		90	85 - 115
Thallium	80.0	74.7		ug/L		93	85 - 115
Silver	80.0	72.3		ug/L		90	85 - 115

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 385814

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385235

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.
	Result	Qualifier		Result	Qualifier				Limits
Cadmium	ND		80.0	72.5		ug/L		91	70 - 130
Copper	1.7	J,DX	80.0	72.8		ug/L		89	70 - 130
Lead	ND		80.0	69.0		ug/L		86	70 - 130
Antimony	0.51	J,DX	80.0	83.8		ug/L		104	70 - 130
Selenium	ND		80.0	73.0		ug/L		91	70 - 130
Thallium	ND		80.0	73.3		ug/L		92	70 - 130
Silver	ND		80.0	71.7		ug/L		90	70 - 130

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 385814

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total Recoverable
Prep Batch: 385235

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	71.4		ug/L		89	70 - 130	2	20
Copper	1.7	J,DX	80.0	72.5		ug/L		89	70 - 130	0	20
Lead	ND		80.0	69.8		ug/L		87	70 - 130	1	20
Antimony	0.51	J,DX	80.0	83.4		ug/L		104	70 - 130	0	20
Selenium	ND		80.0	71.4		ug/L		89	70 - 130	2	20
Thallium	ND		80.0	74.2		ug/L		93	70 - 130	1	20
Silver	ND		80.0	70.6		ug/L		88	70 - 130	2	20

Lab Sample ID: MB 440-385577/2-A
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		01/31/17 16:32	02/02/17 11:21	1
Lead	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Antimony	ND		2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Selenium	ND		2.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Thallium	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1
Silver	ND		1.0	0.50	ug/L		01/31/17 16:32	02/02/17 11:21	1

Lab Sample ID: MB 440-385577/2-A
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		2.0	0.50	ug/L		01/31/17 16:32	02/04/17 15:40	1

Lab Sample ID: LCS 440-385577/1-A
Matrix: Water
Analysis Batch: 386210

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	69.2		ug/L		87	85 - 115
Lead	80.0	69.5		ug/L		87	85 - 115
Antimony	80.0	80.3		ug/L		100	85 - 115
Selenium	80.0	69.9		ug/L		87	85 - 115
Thallium	80.0	70.1		ug/L		88	85 - 115
Silver	80.0	68.4		ug/L		86	85 - 115

Lab Sample ID: LCS 440-385577/1-A
Matrix: Water
Analysis Batch: 386564

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 385577

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Copper	80.0	74.0		ug/L		92	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-174317-2 MS

Matrix: Water

Analysis Batch: 386210

Client Sample ID: Outfall018_20170123_Comp_F

Prep Type: Dissolved

Prep Batch: 385577

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Cadmium	ND	QP	80.0	70.2		ug/L		88	70 - 130	
Lead	ND	QP	80.0	71.5		ug/L		89	70 - 130	
Antimony	ND	QP	80.0	83.6		ug/L		105	70 - 130	
Selenium	ND	QP	80.0	72.4		ug/L		91	70 - 130	
Thallium	ND	QP	80.0	70.8		ug/L		88	70 - 130	
Silver	ND	QP	80.0	69.8		ug/L		87	70 - 130	

Lab Sample ID: 440-174317-2 MS

Matrix: Water

Analysis Batch: 386564

Client Sample ID: Outfall018_20170123_Comp_F

Prep Type: Dissolved

Prep Batch: 385577

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits	%Rec.
	Result	Qualifier		Result	Qualifier					
Copper	1.8	J,DX QP	80.0	68.9		ug/L		84	70 - 130	

Lab Sample ID: 440-174317-2 MSD

Matrix: Water

Analysis Batch: 386210

Client Sample ID: Outfall018_20170123_Comp_F

Prep Type: Dissolved

Prep Batch: 385577

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	71.4		ug/L		89	70 - 130	2	20
Lead	ND	QP	80.0	72.7		ug/L		91	70 - 130	2	20
Antimony	ND	QP	80.0	85.4		ug/L		107	70 - 130	2	20
Selenium	ND	QP	80.0	71.7		ug/L		90	70 - 130	1	20
Thallium	ND	QP	80.0	71.7		ug/L		90	70 - 130	1	20
Silver	ND	QP	80.0	70.8		ug/L		88	70 - 130	1	20

Lab Sample ID: 440-174317-2 MSD

Matrix: Water

Analysis Batch: 386564

Client Sample ID: Outfall018_20170123_Comp_F

Prep Type: Dissolved

Prep Batch: 385577

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Copper	1.8	J,DX QP	80.0	72.3		ug/L		88	70 - 130	5	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-384111/1-A

Matrix: Water

Analysis Batch: 384220

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 384111

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		01/24/17 14:19	01/24/17 21:13	1

Lab Sample ID: LCS 440-384111/2-A

Matrix: Water

Analysis Batch: 384220

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 384111

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	8.11		ug/L		101	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	7.77		ug/L		97	70 - 130

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 384220

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384111

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	7.82		ug/L		98	70 - 130	1	20

Lab Sample ID: MB 440-384878/1-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 384941

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		01/27/17 16:45	01/31/17 14:14	1

Lab Sample ID: LCS 440-384878/2-B
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	7.63		ug/L		95	85 - 115

Lab Sample ID: 440-174317-2 MS
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Outfall018_20170123_Comp_F
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND	QP	8.00	7.36		ug/L		92	70 - 130

Lab Sample ID: 440-174317-2 MSD
Matrix: Water
Analysis Batch: 385549

Client Sample ID: Outfall018_20170123_Comp_F
Prep Type: Dissolved
Prep Batch: 384941

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND	QP	8.00	7.42		ug/L		93	70 - 130	1	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-384088/5
Matrix: Water
Analysis Batch: 384088

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			01/24/17 13:01	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 180.1 - Turbidity, Nephelometric (Continued)

Lab Sample ID: 440-174334-A-8 DU
Matrix: Water
Analysis Batch: 384088

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	7.1		7.13		NTU		0.4	20

Method: DV-WC-0077 - Hydrazine, Ion Chromatography

Lab Sample ID: MB 280-360047/1-A
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 360047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monomethyl Hydrazine	ND		10	0.25	ug/L		01/25/17 20:22	02/03/17 21:06	1

Lab Sample ID: LCS 280-360047/2-A
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	49.6	47.7		ug/L		96	82 - 122

Lab Sample ID: 280-93321-O-16-B MS
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Monomethyl Hydrazine	ND		49.6	42.3		ug/L		85	81 - 121

Lab Sample ID: 280-93321-O-16-C MSD
Matrix: Water
Analysis Batch: 361024

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 360047

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Monomethyl Hydrazine	ND		49.6	43.1		ug/L		87	81 - 121	2	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-384516/1
Matrix: Water
Analysis Batch: 384516

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			01/26/17 08:19	1

Lab Sample ID: LCS 440-384516/2
Matrix: Water
Analysis Batch: 384516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Dissolved Solids	1000	1030		mg/L		103	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 440-174324-A-1 DU
Matrix: Water
Analysis Batch: 384516

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	42		43.0		mg/L		2	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-384939/1
Matrix: Water
Analysis Batch: 384939

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/27/17 16:36	1

Lab Sample ID: LCS 440-384939/2
Matrix: Water
Analysis Batch: 384939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1010		mg/L		101	85 - 115

Lab Sample ID: 440-174439-B-1 DU
Matrix: Water
Analysis Batch: 384939

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	110		107		mg/L		3	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-384650/1-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 384650

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		01/26/17 15:00	01/26/17 20:29	1

Lab Sample ID: LCS 440-384650/2-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	101		ug/L		101	90 - 110

Lab Sample ID: LCSD 440-384650/3-A
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	101		ug/L		101	90 - 110	1	10

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	101		ug/L		101	70 - 115

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 384744

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 384650

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	103		ug/L		103	70 - 115	2	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-384765/10
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			01/26/17 21:42	1

Lab Sample ID: LCS 440-384765/11
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	4.960		mg/L		99	90 - 110

Lab Sample ID: MRL 440-384765/9
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	0.200	0.1740	J,DX	mg/L		87	10 - 200

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	ND		5.00	4.960		mg/L		99	90 - 110

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 384765

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Ammonia (as N)	ND		5.00	4.980		mg/L		100	90 - 110	0	15

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-384224/8
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.65	mg/L			01/24/17 11:12	1

Lab Sample ID: LCS 440-384224/7
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.78		mg/L		98	90 - 110

Lab Sample ID: 440-174261-N-1 MS
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	18		5.00	22.6		mg/L		99	80 - 120

Lab Sample ID: 440-174261-N-1 MSD
Matrix: Water
Analysis Batch: 384224

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	18		5.00	22.6		mg/L		99	80 - 120	0	20

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-383953/3
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			01/23/17 21:55	1

Lab Sample ID: LCS 440-383953/4
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.270		mg/L		108	90 - 110

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.11		0.250	0.404		mg/L		119	50 - 125

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: SM 5540C - Methylene Blue Active Substances (MBAS) (Continued)

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 383953

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.11		0.250	0.386		mg/L		112	50 - 125	5	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-384132/1
Matrix: Water
Analysis Batch: 384132

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			01/24/17 15:15	1

Lab Sample ID: LCS 440-384132/4
Matrix: Water
Analysis Batch: 384132

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	193		mg/L		97	85 - 115

Lab Sample ID: LCSD 440-384132/5
Matrix: Water
Analysis Batch: 384132

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	195		mg/L		98	85 - 115	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

GC/MS VOA

Analysis Batch: 385626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	8260B SIM	
MB 440-385626/2	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-385626/3	Lab Control Sample	Total/NA	Water	8260B SIM	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	8260B SIM	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	8260B SIM	

GC/MS Semi VOA

Prep Batch: 384349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	625	
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	625	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	625	

Analysis Batch: 384955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	625	384349
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	625	384349

Analysis Batch: 385461

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	625	384349
MB 440-384349/1-A	Method Blank	Total/NA	Water	625	384349
LCS 440-384349/2-A	Lab Control Sample	Total/NA	Water	625	384349
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	625	384349
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	625	384349

GC Semi VOA

Prep Batch: 384080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	608	
MB 440-384080/1-A	Method Blank	Total/NA	Water	608	
LCS 440-384080/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-384080/5-B	Lab Control Sample	Total/NA	Water	608	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	608	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	608	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	608	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	608	

Analysis Batch: 384312

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	608 PCB LL	384080
MB 440-384080/1-A	Method Blank	Total/NA	Water	608 PCB LL	384080
LCS 440-384080/5-B	Lab Control Sample	Total/NA	Water	608 PCB LL	384080

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

GC Semi VOA (Continued)

Analysis Batch: 384312 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	608 PCB LL	384080
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	608 PCB LL	384080

Analysis Batch: 384572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	608 Pesticides	384080
MB 440-384080/1-A	Method Blank	Total/NA	Water	608 Pesticides	384080
LCS 440-384080/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	384080
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	608 Pesticides	384080
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	608 Pesticides	384080

HPLC/IC

Analysis Batch: 383771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	300.0	
MB 440-383771/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383771/2	Lab Control Sample	Total/NA	Water	300.0	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	300.0	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	300.0	

Analysis Batch: 383772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	300.0	
MB 440-383772/4	Method Blank	Total/NA	Water	300.0	
LCS 440-383772/2	Lab Control Sample	Total/NA	Water	300.0	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	300.0	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	300.0	

Analysis Batch: 383968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	218.6	
MB 440-383968/3	Method Blank	Total/NA	Water	218.6	
LCS 440-383968/2	Lab Control Sample	Total/NA	Water	218.6	
MRL 440-383968/4	Lab Control Sample	Total/NA	Water	218.6	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	218.6	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	218.6	

Analysis Batch: 383991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	314.0	
MB 440-383991/3	Method Blank	Total/NA	Water	314.0	
LCS 440-383991/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-383991/5	Lab Control Sample	Total/NA	Water	314.0	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	314.0	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	314.0	

Analysis Batch: 384058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

HPLC/IC (Continued)

Analysis Batch: 384058 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-384058/4	Method Blank	Total/NA	Water	300.0	
LCS 440-384058/2	Lab Control Sample	Total/NA	Water	300.0	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	300.0	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	300.0	

Analysis Batch: 385518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 147877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	1613B	
440-174317-1 - RA	Outfall018_20170123_Comp	Total/NA	Water	1613B	
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 148158

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-147877/1-A	Method Blank	Total/NA	Water	1613B	147877
LCS 320-147877/2-A	Lab Control Sample	Total/NA	Water	1613B	147877
LCS 320-147877/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	147877

Analysis Batch: 148159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	1613B	147877

Analysis Batch: 148329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1 - RA	Outfall018_20170123_Comp	Total/NA	Water	1613B	147877

Metals

Prep Batch: 384111

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	245.1	
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	245.1	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	245.1	

Analysis Batch: 384220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	245.1	384111
MB 440-384111/1-A	Method Blank	Total/NA	Water	245.1	384111
LCS 440-384111/2-A	Lab Control Sample	Total/NA	Water	245.1	384111
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	245.1	384111
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	245.1	384111

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Metals (Continued)

Filtration Batch: 384878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	FILTRATION	
MB 440-384878/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-384878/1-D	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-384878/2-D	Lab Control Sample	Dissolved	Water	FILTRATION	
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	FILTRATION	
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 384923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total Recoverable	Water	200.2	
MB 440-384923/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-384923/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174317-1 MS	Outfall018_20170123_Comp	Total Recoverable	Water	200.2	
440-174317-1 MSD	Outfall018_20170123_Comp	Total Recoverable	Water	200.2	

Prep Batch: 384941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	245.1	384878
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384878
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384878
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	245.1	384878
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	245.1	384878

Prep Batch: 385235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total Recoverable	Water	200.2	
MB 440-385235/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385235/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174317-1 MS	Outfall018_20170123_Comp	Total Recoverable	Water	200.2	
440-174317-1 MSD	Outfall018_20170123_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 385549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	245.1	384941
MB 440-384878/1-B	Method Blank	Dissolved	Water	245.1	384941
LCS 440-384878/2-B	Lab Control Sample	Dissolved	Water	245.1	384941
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	245.1	384941
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	245.1	384941

Prep Batch: 385576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	200.2	384878
MB 440-384878/1-D	Method Blank	Dissolved	Water	200.2	384878
LCS 440-384878/2-D	Lab Control Sample	Dissolved	Water	200.2	384878
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	200.2	384878
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	200.2	384878

Prep Batch: 385577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	200.2	384878

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Metals (Continued)

Prep Batch: 385577 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	200.2	384878
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	200.2	384878

Analysis Batch: 385783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	384923
MB 440-384923/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	384923
LCS 440-384923/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	384923
440-174317-1 MS	Outfall018_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	384923
440-174317-1 MSD	Outfall018_20170123_Comp	Total Recoverable	Water	200.7 Rev 4.4	384923

Analysis Batch: 385814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total Recoverable	Water	200.8	385235
MB 440-385235/1-A	Method Blank	Total Recoverable	Water	200.8	385235
LCS 440-385235/2-A	Lab Control Sample	Total Recoverable	Water	200.8	385235
440-174317-1 MS	Outfall018_20170123_Comp	Total Recoverable	Water	200.8	385235
440-174317-1 MSD	Outfall018_20170123_Comp	Total Recoverable	Water	200.8	385235

Analysis Batch: 386053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385576
MB 440-384878/1-D	Method Blank	Dissolved	Water	200.7 Rev 4.4	385576
LCS 440-384878/2-D	Lab Control Sample	Dissolved	Water	200.7 Rev 4.4	385576
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385576
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	200.7 Rev 4.4	385576

Analysis Batch: 386100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total Recoverable	Water	SM 2340B	
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	SM 2340B	

Analysis Batch: 386210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	200.8	385577
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.8	385577
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.8	385577
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	200.8	385577
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	200.8	385577

Analysis Batch: 386564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-2	Outfall018_20170123_Comp_F	Dissolved	Water	200.8	385577
MB 440-385577/2-A	Method Blank	Total Recoverable	Water	200.8	385577
LCS 440-385577/1-A	Lab Control Sample	Total Recoverable	Water	200.8	385577
440-174317-2 MS	Outfall018_20170123_Comp_F	Dissolved	Water	200.8	385577
440-174317-2 MSD	Outfall018_20170123_Comp_F	Dissolved	Water	200.8	385577

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

General Chemistry

Prep Batch: 360047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	Filtration	
MB 280-360047/1-A	Method Blank	Total/NA	Water	Filtration	
LCS 280-360047/2-A	Lab Control Sample	Total/NA	Water	Filtration	
280-93321-O-16-B MS	Matrix Spike	Total/NA	Water	Filtration	
280-93321-O-16-C MSD	Matrix Spike Duplicate	Total/NA	Water	Filtration	

Analysis Batch: 361024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	DV-WC-0077	360047
MB 280-360047/1-A	Method Blank	Total/NA	Water	DV-WC-0077	360047
LCS 280-360047/2-A	Lab Control Sample	Total/NA	Water	DV-WC-0077	360047
280-93321-O-16-B MS	Matrix Spike	Total/NA	Water	DV-WC-0077	360047
280-93321-O-16-C MSD	Matrix Spike Duplicate	Total/NA	Water	DV-WC-0077	360047

Analysis Batch: 383953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM 5540C	
MB 440-383953/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-383953/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	SM 5540C	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	SM 5540C	

Analysis Batch: 384088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	180.1	
MB 440-384088/5	Method Blank	Total/NA	Water	180.1	
440-174334-A-8 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 384132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM5210B	
USB 440-384132/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-384132/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-384132/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 384224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM 5310B	
MB 440-384224/8	Method Blank	Total/NA	Water	SM 5310B	
LCS 440-384224/7	Lab Control Sample	Total/NA	Water	SM 5310B	
440-174261-N-1 MS	Matrix Spike	Total/NA	Water	SM 5310B	
440-174261-N-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5310B	

Analysis Batch: 384516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM 2540C	
MB 440-384516/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-384516/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-174324-A-1 DU	Duplicate	Total/NA	Water	SM 2540C	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

General Chemistry (Continued)

Prep Batch: 384650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	Distill/CN	
MB 440-384650/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCS 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	Distill/CN	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	Distill/CN	

Analysis Batch: 384744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM 4500 CN E	384650
MB 440-384650/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	384650
LCS 440-384650/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	384650
LCS 440-384650/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	384650
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	SM 4500 CN E	384650
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	SM 4500 CN E	384650

Analysis Batch: 384765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-384765/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-384765/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-384765/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	SM 4500 NH3 G	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	SM 4500 NH3 G	

Analysis Batch: 384939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	SM 2540D	
MB 440-384939/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-384939/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-174439-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BA	Relative percent difference out of control

GC Semi VOA

Qualifier	Qualifier Description
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
BB	Sample > 4X spike concentration
QP	Holding time Immediate. Analyzed as close to receipt as possible
MB	Analyte present in the method blank

General Chemistry

Qualifier	Qualifier Description
BU	Sample was prepped beyond the specified holding time
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)

TestAmerica Irvine

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-20-17
Arkansas DEQ	State Program	6	88-0687	06-01-17
California	State Program	9	2513	08-31-16 *
Connecticut	State Program	1	PH-0686	09-30-18
Florida	NELAP	4	E87667	06-30-17
Georgia	State Program	4	N/A	01-08-18
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16 *
Kansas	NELAP	7	E-10166	04-30-17
Louisiana	NELAP	6	02096	06-30-17
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-17 *
Nevada	State Program	9	CO0026	07-31-17
New Hampshire	NELAP	1	205310	04-28-17
New Jersey	NELAP	2	CO004	06-30-17
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-17
North Dakota	State Program	8	R-034	01-09-17 *
Oklahoma	State Program	6	8614	08-31-17
Oregon	NELAP	10	4025	01-08-18
Pennsylvania	NELAP	3	68-00664	07-31-17
South Carolina	State Program	4	72002001	01-09-17 *
Texas	NELAP	6	T104704183-16-12	09-30-17
USDA	Federal		P330-16-00397	12-15-19
Utah	NELAP	8	CO00026	07-31-17
Virginia	NELAP	3	460232	06-14-17
Washington	State Program	10	C583	08-02-17
West Virginia DEP	State Program	3	354	11-30-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Laboratory: TestAmerica Denver (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999615430	08-31-17
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 9, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall018_20170122_Comp (440-174317-1)
DATE RECEIVED: 24 Jan - 17
ABC LAB NO.: TAM0117.199


CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 1.06 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 08 Feb-17 16:51 (p 1 of 1)
 Test Code: TAM0117.199sel | 11-3964-3566

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 18-4887-3363	Test Type: Cell Growth	Analyst:
Start Date: 24 Jan-17 16:17	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 28 Jan-17 14:45	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 11-7248-3138	Code: TAM0117.199s	Client: Test America Irvine
Sample Date: 22 Jan-17 18:36	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report	
Sample Age: 46h (2.2 °C)	Station: Outfall018_20170122_Comp (440-174317-	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
20-0950-8951	Cell Density	TST-Welch's t Test	<1.0E-37	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
20-0950-8951	Cell Density	Control CV	0.02655	<<	0.2	Yes	Passes Criteria
20-0950-8951	Cell Density	Control Resp	1.44E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.438E+6	1.407E+6	1.470E+6	1.389E+6	1.516E+6	1.351E+4	3.820E+4	2.66%	0.00%
100		8	1.423E+6	1.402E+6	1.445E+6	1.377E+6	1.459E+6	8.988E+3	2.542E+4	1.79%	1.06%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.456E+6	1.412E+6	1.389E+6	1.417E+6	1.516E+6	1.449E+6	1.426E+6	1.443E+6
100		1.419E+6	1.422E+6	1.377E+6	1.459E+6	1.406E+6	1.434E+6	1.420E+6	1.449E+6

CETIS Analytical Report

Report Date: 08 Feb-17 16:51 (p 1 of 2)
 Test Code: TAM0117.199sel | 11-3964-3566

Selenastrum Growth Test		Aquatic Bioassay & Consulting Labs, Inc.	
Analysis ID: 20-0950-8951	Endpoint: Cell Density	CETIS Version: CETISv1.9.2	
Analyzed: 08 Feb-17 16:50	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes	
Batch ID: 18-4887-3363	Test Type: Cell Growth	Analyst:	
Start Date: 24 Jan-17 16:17	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water	
Ending Date: 28 Jan-17 14:45	Species: Selenastrum capricornutum	Brine: Not Applicable	
Duration: 94h	Source: Aquatic Biosystems, CO	Age:	
Sample ID: 11-7248-3138	Code: TAM0117.199s	Client: Test America Irvine	
Sample Date: 22 Jan-17 18:36	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls	
Receipt Date: 24 Jan-17 12:00	Source: Bioassay Report		
Sample Age: 46h (2.2 °C)	Station: Outfall018_20170122_Comp (440-174317-		

Data Transform	Alt Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test								
Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	25.43	0.6938	13	CDF	<1.0E-37	Non-Significant Effect

Test Acceptability Criteria		TAC Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision
Control CV	0.02655	<<	0.2	Yes	Passes Criteria
Control Resp	1.44E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	930250000	930250000	1	0.8837	0.3631	Non-Significant Effect
Error	1.474E+10	1.053E+09	14			
Total	1.567E+10		15			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Levene Equality of Variance Test	0.8207	8.862	0.3803	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.8403	8.862	0.3748	Equal Variances	
Variances	Variance Ratio F Test	2.258	8.885	0.3047	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.2854	3.878	0.6564	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.263	2.576	0.2067	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1158	0.2471	0.9643	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.9585	0.8408	0.6352	Normal Distribution	

Cell Density Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.438E+6	1.407E+6	1.470E+6	1.434E+6	1.389E+6	1.516E+6	1.351E+4	2.66%	0.00%
100		8	1.423E+6	1.402E+6	1.445E+6	1.421E+6	1.377E+6	1.459E+6	8.987E+3	1.79%	1.06%

Cell Density Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	
0	N	1.456E+6	1.412E+6	1.389E+6	1.417E+6	1.516E+6	1.449E+6	1.426E+6	1.443E+6	
100		1.419E+6	1.422E+6	1.377E+6	1.459E+6	1.406E+6	1.434E+6	1.420E+6	1.449E+6	

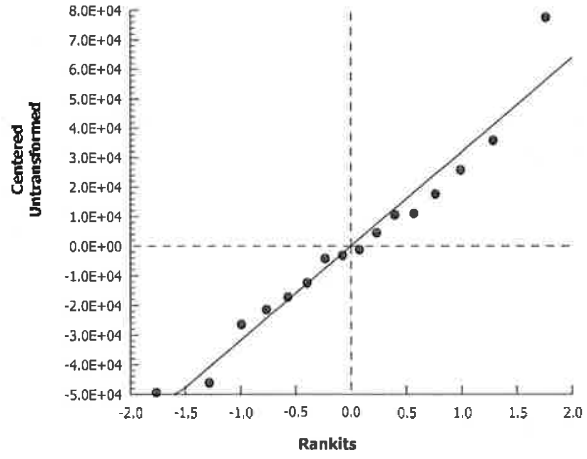
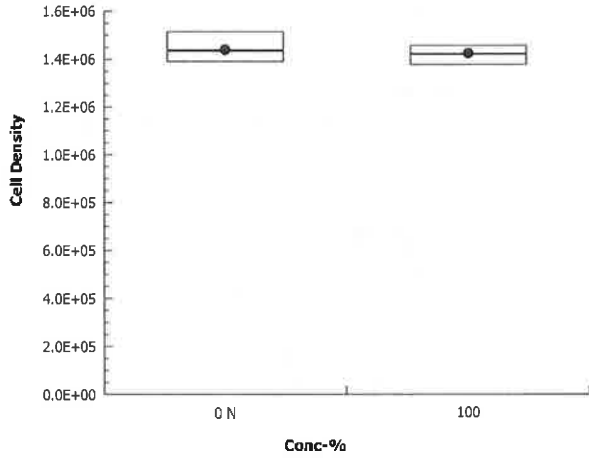
Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 20-0950-8951 Endpoint: Cell Density
Analyzed: 08 Feb-17 16:50 Analysis: Parametric Bioequivalence-Two Sample

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Measurement Report

Report Date: 08 Feb-17 16:51 (p 1 of 2)
 Test Code: TAM0117.199sel | 11-3964-3566

Selenastrum Growth Test				Aquatic Bioassay & Consulting Labs, Inc.			
Batch ID:	18-4887-3363	Test Type:	Cell Growth	Analyst:			
Start Date:	24 Jan-17 16:17	Protocol:	EPA/821/R-02-013 (2002)	Diluent:	Laboratory Water		
Ending Date:	28 Jan-17 14:45	Species:	Selenastrum capricornutum	Brine:	Not Applicable		
Duration:	94h	Source:	Aquatic Biosystems, CO	Age:			
Sample ID:	11-7248-3138	Code:	TAM0117.199s	Client:	Test America Irvine		
Sample Date:	22 Jan-17 18:36	Material:	Sample Water	Project:	Boeing NPDES SSFL Outfalls		
Receipt Date:	24 Jan-17 12:00	Source:	Bioassay Report				
Sample Age:	46h (2.2 °C)	Station:	Outfall018_20170122_Comp (440-174317-				

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
100		1	71			71	71	0	0	0.0%	0
Overall		2	70	57.29	82.71	69	71	1	1.414	2.02%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	443.8	437.4	450.2	439	452	2.311	5.167	1.16%	0
100		5	472.4	468	476.8	468	477	1.568	3.507	0.74%	0
Overall		10	458.1	446.9	469.3	439	477	4.945	15.64	3.41%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	97			97	97	0	0	0.0%	0
100		1	138			138	138	0	0	0.0%	0
Overall		2	117.5	-143	378	97	138	20.5	28.99	24.67%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.52	7.358	7.682	7.4	7.7	0.05831	0.1304	1.73%	0
100		5	7.46	7.272	7.648	7.2	7.6	0.06782	0.1517	2.03%	0
Overall		10	7.49	7.392	7.588	7.2	7.7	0.04333	0.137	1.83%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
100		5	24.16	23.9	24.42	24	24.5	0.09272	0.2073	0.86%	0
Overall		10	24.16	24.02	24.3	24	24.5	0.06182	0.1955	0.81%	0 (0%)

CETIS Measurement Report

Report Date: 08 Feb-17 16:51 (p 2 of 2)
 Test Code: TAM0117.199sel | 11-3964-3566

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Alkalinity (CaCO3)-mg/L

Conc-%	Code	1
0	N	69
100		71

Conductivity-µmhos

Conc-%	Code	1	2	3	4	5
0	N	452	439	440	445	443
100		477	474	470	468	473

Hardness (CaCO3)-mg/L

Conc-%	Code	1
0	N	97
100		138

pH-Units

Conc-%	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.6	7.7
100		7.5	7.2	7.5	7.5	7.6

Temperature-°C

Conc-%	Code	1	2	3	4	5
0	N	24.5	24.2	24.1	24	24
100		24.5	24.2	24.1	24	24



CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnett Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits			Overlap	Decision
				Lower	Upper			
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria	

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test			Aquatic Bioassay & Consulting Labs, Inc.		
Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2			
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes			
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:			
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water			
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable			
Duration: 95h	Source: Aquatic Biosystems, CO	Age:			
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab			
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:			
Receipt Date:	Source: Reference Toxicant				
Sample Age: n/a	Station: REF TOX				

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnnett Multiple Comparison Test									
Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria		TAC Limits				
Attribute	Test Stat	Lower	Upper	Overlap	Decision	
Control CV	0.04997	<<	0.2	Yes	Passes Criteria	
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria	
PMSD	0.05988	0.091	0.29	Yes	Below Criteria	

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances	
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances	
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances	
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution	
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution	
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution	
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution	
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution	
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution	

Cell Density Summary											
Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

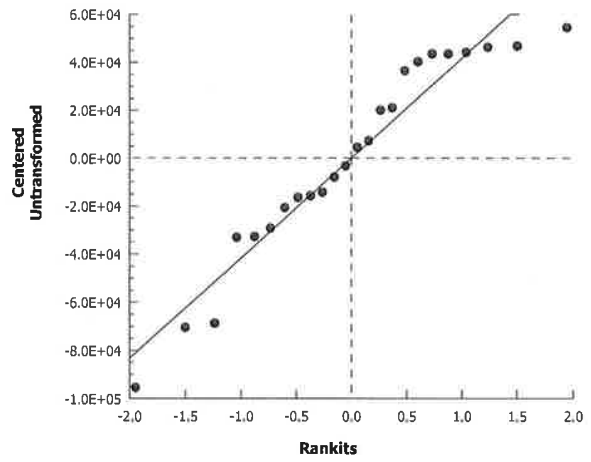
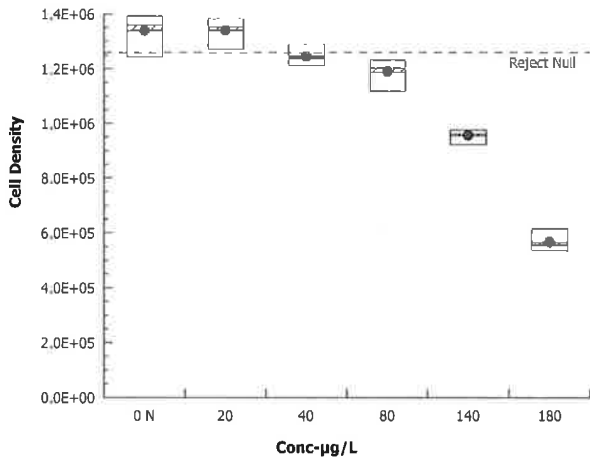
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	69			69	69	0	0	0.0%	0
20		1	64			64	64	0	0	0.0%	0
40		1	65			65	65	0	0	0.0%	0
80		1	69			69	69	0	0	0.0%	0
140		1	63			63	63	0	0	0.0%	0
180		1	62			62	62	0	0	0.0%	0
Overall		6	65.33	62.17	68.49	62	69	1.229	3.011	4.61%	0 (0%)

Conductivity-µmhos

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	433.4	427.8	439	430	441	2.015	4.506	1.04%	0
20		5	433	416.2	449.8	420	456	6.05	13.53	3.12%	0
40		5	411.4	407.6	415.2	407	415	1.364	3.05	0.74%	0
80		5	406	394	418	398	418	4.324	9.67	2.38%	0
140		5	380.8	373.6	388	373	387	2.596	5.805	1.52%	0
180		5	362	353.7	370.3	355	373	3	6.708	1.85%	0
Overall		30	404.4	394.2	414.7	355	456	5.013	27.46	6.79%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
20		1	99			99	99	0	0	0.0%	0
40		1	95			95	95	0	0	0.0%	0
80		1	96			96	96	0	0	0.0%	0
140		1	97			97	97	0	0	0.0%	0
180		1	93			93	93	0	0	0.0%	0
Overall		6	96.5	94.04	98.96	93	99	0.9574	2.345	2.43%	0 (0%)

pH-Units

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.54	7.283	7.797	7.4	7.9	0.09274	0.2074	2.75%	0
20		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
40		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
80		5	7.84	7.632	8.048	7.7	8.1	0.07483	0.1673	2.13%	0
140		5	7.84	7.614	8.066	7.6	8.1	0.08124	0.1817	2.32%	0
180		5	7.82	7.636	8.004	7.6	8	0.06633	0.1483	1.9%	0
Overall		30	7.787	7.714	7.859	7.4	8.1	0.03547	0.1943	2.50%	0 (0%)

CETIS Measurement Report

Report Date: 19 Jan-17 16:22 (p 2 of 2)

Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Temperature-°C

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
20		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
40		5	24.42	23.98	24.86	24	24.8	0.1594	0.3564	1.46%	0
80		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
140		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
180		5	24.58	24.21	24.95	24.1	24.8	0.1319	0.295	1.2%	0
Overall		30	24.55	24.45	24.66	24	24.8	0.05202	0.2849	1.16%	0 (0%)

Alkalinity (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	69
20		64
40		65
80		69
140		63
180		62

Conductivity-µmhos

Conc-µg/L	Code	1	2	3	4	5
0	N	433	433	430	430	441
20		420	429	430	430	456
40		407	410	412	415	413
80		398	400	415	418	399
140		373	378	380	387	386
180		361	359	362	355	373

Hardness (CaCO3)-mg/L

Conc-µg/L	Code	1
0	N	99
20		99
40		95
80		96
140		97
180		93

pH-Units

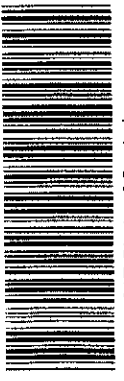
Conc-µg/L	Code	1	2	3	4	5
0	N	7.4	7.4	7.5	7.5	7.9
20		7.7	7.9	7.8	7.7	8.1
40		7.7	7.9	7.8	7.7	8.1
80		7.7	7.9	7.8	7.7	8.1
140		7.6	7.9	7.8	7.8	8.1
180		7.6	7.9	7.8	7.8	8

Temperature-°C

Conc-µg/L	Code	1	2	3	4	5
0	N	24.1	24.8	24.8	24.7	24.5
20		24.1	24.8	24.8	24.7	24.5
40		24.1	24.8	24	24.7	24.5
80		24.1	24.8	24.8	24.7	24.5
140		24.1	24.8	24.8	24.7	24.5
180		24.1	24.8	24.8	24.7	24.5



10/2
2013



CHAIN OF CUSTODY FORM

440-174317 Chain of Custody

Client Name/Address:		Project:		ANALYSIS REQUIRED												Comments				
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Boeing-SSFL NPDES Permit 2017 Annual Outfall [001, 002, 011, 018] Outfall 018 Camp		Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Mn, Sb, As, Bi, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V, Hachness as CaCO3 BOD5 (20 degrees C) Surfactants (MBAS) O ₃ , F ₂ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Perchlorate Turbidity, TDS TSS Ammonia-N (350 Z) Priority Pollutants: Pesticides+PCBs SVOCs PP (625) Total Recoverable Metals: Mercury (245.1)																
Test America Contact: Urvashti Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132; 856.337.4061(cell)		Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)																
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MISMED	Total Recoverable Metals: Cu, Pb, Hg, B, Ba, Mn, Sb, As, Bi, Cd, Cr, Ni, Se, Ag, Tl, Zn, Co, V, Hachness as CaCO3	BOD5 (20 degrees C)	Surfactants (MBAS)	O ₃ , F ₂ , SO ₄ , Nitrate-N, Nitrite-N, NO ₃ +NO ₂ -N, Perchlorate	Turbidity, TDS	TSS	Ammonia-N (350 Z)	Priority Pollutants: Pesticides+PCBs	SVOCs PP (625)	Total Recoverable Metals: Mercury (245.1)	Comments	
Outfall 018	Outfall018_20170122_Comp	1/22/2017 1834	WM	500 mL Poly	3	HNO ₃	80	Yes	X											
			WM	1 L Glass Amber	2	None	110	No												
			WM	1 L Poly	1	None	115	No												
			WM	500 mL Poly	2	None	120	Yes												
			WM	500 mL Poly	2	None	125	Yes												
			WM	500 mL Poly	1	None	150	No												
			WM	500 mL Poly	3	H ₂ SO ₄	160	Yes												
			WM	1 L Glass Amber	2	None	250	Yes												
			WM	1 L Glass Amber	2	None	175	Yes												
			WM	1 L Poly	1	None	185	No												
			WM	1 L Glass Amber	2	HNO ₃	245	Yes												
			WM	1 L Glass Amber	2	None	149	No												
			WM	500 mL Poly	2	None	199	No												
			WM	500 mL Poly	2	None	120	No												
			WM	1 L Glass Amber	2	None	250	No												
			WM	1 L Glass Amber	2	None	250	No												
			WM	1 L Glass Amber	2	None	175	No												

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event. These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Relinquished By: <i>BS & B</i>	Date/Time: 1/23/17/1400	Company: JHA	Received By: <i>[Signature]</i>	Date/Time: 1-23-17 1400	Company:
Relinquished By: <i>[Signature]</i>	Date/Time: 1-23-17 1550	Company:	Received By: <i>[Signature]</i>	Date/Time: 1/23/17 1550	Company:
Relinquished By: <i>[Signature]</i>	Date/Time: 1-23-17 1550	Company:	Received By: <i>[Signature]</i>	Date/Time: 1-23-17 1550	Company:

4/3/40 18/21 17/20 10-77



2 of 2
3042

CHAIN OF CUSTODY FORM

R/A R R R R A A A A

Client Name/Address:		Project:		ANALYSIS REQUIRED										Comments											
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Boeing-SSFL NPDES Permit 2017 Annual Outfall (001, 002, 011, 018) Outfall 018 Comp		Cr (M), Total (218.9) Monomethyl Hydrazine Total Organic Carbon 1,4-Dioxane Chronic Toxicity - Selenium CS-137 (901.0 or 901.1) Radium 226 (904.0), Uranium (908.0), K-40, Tritium (T-3) (906.0), Sr-90 (905.0), Total Gross Alpha (900.0), Gross Beta (900.0) Yr. Hardness as CaCO3 Total Dissolved Metals: Cu, Pb, Hg, B, Ba, Tn, Mn, Sb, As, Bi, Cd, Cr, Ni, Se, Ag, Ti, Zn, S, S ₂										Filter and preserve with 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.											
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	#MSMSD	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Outfall 018	Outfall018_20170122_Comp_F	1/23/2017 1836	WM	1 L Poly	3	None	190	Yes																	
			WM	borosilicate vial	3/6	None	320	Yes																	
			WM	500 mL Poly	220	NaOH	220	Yes																	
			WM	2.5 Gal Cube	225	None	225	Yes																	
			WM	1 L Glass Amber	230	None	230	Yes																	
			WM	1 Gal Cube	235	None	235	No																	
			WM	40 mL VOA	240	HCl	240	Yes																	
			WM	1 L Glass Amber	245	HCl	245	No																	
			WM	1 L Glass Amber	255	None	255	No																	
			WM	500 mL Poly	260	None	260	Yes																	
			WM	40 mL VOA	280	HCl	280	No																	
			WM	1 L Glass Amber	255	None	255	No																	

Field Manager: Mark Dominick
818.350.7312, 818.599.0702 (cell)

Project Manager: Nancy Gardiner
818.295.7132, 858.337.4061 (cell)

Sampler: *Brian Benson*

Legend: R-Routine, A-Annual, Q-Quarterly

COC Page 2 of 3 and Page 3 of 3 are the composite samples for Outfall 018 for this storm event.
These must be added to the same work order for COC Page 1 of 3 for Outfall 018 for the same event.

Relinquished By	Date/Time	Company	Received By	Date/Time	Company
<i>Bob</i>	1/23/17/1400	JHA	<i>Bob</i>	1-23-17 1400	
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
<i>Bob</i>	1-23-17 1550		<i>Bob</i>	1/23/17 1550	

Turn-around time: (Check)
 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:

Sample Integrity: (Check)
 Intact: On Ice:

Data Requirements: (Check)
 No Level IV: All Level IV:

4.3/4.4 1.8/2.1 1.7/2.0 1.4/1.7

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashi	Lab PM: Patel, Urvashi	Carrier Tracking No(s): 440-106774.1	COC No: 440-106774.1
Client Contact: urvashi.patel@testamericainc.com		Phone: urvashi.patel@testamericainc.com	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Shipping/Receiving		Accreditations Required (See note):			
Company: TestAmerica Laboratories, Inc.		Job #: 440-174317-1			
Address: 850 Riverside Parkway, West Sacramento, CA, 95605		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AHA/O2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecaldehyde U - Acetone V - MCAA W - pH 4-5 Z - other (specify)			
Due Date Requested: 2/2/2017		Analysis Requested:			
TAT Requested (days):		Total Number of containers: 1			
PO #:		Perform MS/MSD (Yes or No):			
WO #:		Field Filtered Sample (Yes or No):			
Project #:		1613B/1613B_Sox_Sep_P Standard List w/ Totals			
SSON#:		X			
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=soil/sediment, A=Air)
Outfall018_20170122_Comp (440-174317-1)		1/22/17	18:36 Pacific	Water	Water
Special Instructions/Note:		See QAS, Boeing_wfu to zero, ugl; Use Boeing glassware			
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Special Instructions/QC Requirements:					
Empty Kit Relinquished by:		Date:			
Relinquished by: Va Bank		Date/Time: 1/24/17 17:00			
Relinquished by:		Date/Time: 1/25/17 00:00			
Relinquished by:		Date/Time:			
Custody Seal's Intact: Δ Yes Δ No		Custody Seal No.: 4.3.3 C			
Custody Seal's Intact: Δ Yes Δ No		Cooler Temperature(s) °C and Other Remarks: 4.3.3 C			



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174317-1

Login Number: 174317

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174317-1

Login Number: 174317

List Number: 3

Creator: Woodworth, Sean P

List Source: TestAmerica Denver

List Creation: 01/25/17 02:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174317-1

Login Number: 174317

List Number: 4

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/26/17 09:53 AM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (25-164)	TCDF (24-169)	PeCDD (25-181)	PeCDF1 (24-185)	PeCDF2 (21-178)	HxCDD1 (32-141)	HxCDD2 (28-130)	HxCDF1 (26-152)
440-174317-1	Outfall018_20170123_Comp	75	67	82	70	72	78	75	68
440-174317-1 - RA	Outfall018_20170123_Comp		58						
MB 320-147877/1-A	Method Blank	68	62	73	63	70	76	72	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (26-123)	HxCDF4 (29-147)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDF1 (28-143)	HpCDF2 (26-138)	OCDD (17-157)	HxCDF1 (26-152)
440-174317-1	Outfall018_20170123_Comp	65	68	67	90	73	85	107	68
440-174317-1 - RA	Outfall018_20170123_Comp								
MB 320-147877/1-A	Method Blank	61	64	63	83	69	78	96	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-174317-1	Outfall018_20170123_Comp		65		68		67	90	
440-174317-1 - RA	Outfall018_20170123_Comp								
MB 320-147877/1-A	Method Blank		61		64		63	83	

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-174317-1	Outfall018_20170123_Comp		73		85		107
440-174317-1 - RA	Outfall018_20170123_Comp						
MB 320-147877/1-A	Method Blank		69		78		96

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-147877/2-A	Lab Control Sample	71	65	77	67	75	77	72	67
LCSD 320-147877/3-A	Lab Control Sample Dup	66	60	71	62	67	74	67	61

TestAmerica Irvine

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-147877/2-A	Lab Control Sample	63	67	64	88	75	84	103
LCSD 320-147877/3-A	Lab Control Sample Dup	58	62	60	82	70	78	97

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174317-2

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 3, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-174317-2

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170123_Comp	440-174317-1	N/A	WM	1/23/17 11:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174317-2:

- The laboratories received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. VARIOUS EPA METHODS — RADIONUCLIDES

Elizabeth Wessling of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review* (2014).

III.1. HOLDING TIMES:

The tritium sample was analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha and Radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for gross alpha and Radium-226 were qualified as estimated (UJ) in the sample. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

There were no analytes detected in the method blanks and no qualifications were required with the exception of total uranium. Total uranium was not different from the method blank at the 1% level of confidence and was therefore qualified as a nondetect (U) in the site sample.

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses were performed on the site sample in this SDG for total uranium, gross alpha, gross beta, Radium-226, Radium-228, strontium-90 and tritium. Recoveries and RPDs were within the laboratory QC limits with the exception of gross alpha which was recovered below the QC limits of 60-140% at 56% and 59%. Gross alpha was qualified as estimated (UJ) in the sample.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed for the sample in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the



associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401743172

Analysis Method E900

Sample Name Outfall018_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 11:00:00 AM Validation Level: 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.10	1.12	1.79	1.79	pCi/L	U	UJ	*III, Q
Gross Beta Analytes	GROSSBETA	3.67	0.915	0.986	0.986	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall018_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 11:00:00 AM Validation Level: 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-1.13	7.43	13.3	13.3	pCi/L	U	U	
Potassium-40	13966-00-2	-94.0	157	215	215	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall018_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 11:00:00 AM Validation Level: 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.177	0.228	0.378	0.378	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall018_20170123_Comp Matrix Type: WM Result Type: TRG

Sample Date: 1/23/2017 11:00:00 AM Validation Level: 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.179	0.289	0.486	0.486	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.00912	0.144	0.262	0.262	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	5.86	162	291	291	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall018_20170123_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 11:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-174317-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.157	0.137	0.145	0.145	pCi/L		U	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174317-2

Client Project/Site: Annual Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/23/2017 11:06:54 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through
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www.testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/23/2017 11:06:54 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174317-1	Outfall018_20170123_Comp	Water	01/23/17 11:00	01/23/17 15:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Job ID: 440-174317-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-174317-2**

Comments

No additional comments.

Receipt

The samples were received on 1/23/2017 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.0° C, 2.1° C and 4.6° C.

RAD

Method(s) 900.0: Gross Alpha/Beta Prep Batch 160-292256:

The gross alpha matrix spike and matrix spike duplicate (MS/MSD) recoveries are outside the lower control limit of 60% (56% and 59%). Sample matrix interference is suspected because the associated gross alpha laboratory control sample (LCS) recovery is within acceptance limits. The data have been qualified and reported.

Outfall018_20170123_Comp (440-174317-1), Outfall018_20170123_Comp (440-174317-1[MS]), Outfall018_20170123_Comp (440-174317-1[MSD]), (LCS 160-292256/2-A), (LCSB 160-292256/3-A), (MB 160-292256/1-A), (440-174317-Q-1-N MSB) and (440-174317-Q-1-O MSB)

Method(s) LSC_Dist_Susp: Tritium Batch: 293701

Sample size was reduced to 75mL instead of the normal 100mL because their was insufficient sample provided.

Outfall018_20170123_Comp (440-174317-1), Outfall018_20170123_Comp (440-174317-1[MS]) and Outfall018_20170123_Comp (440-174317-1[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.10	U	1.12	1.12	3.00	1.79	pCi/L	02/14/17 10:22	02/20/17 21:38	1
Gross Beta	3.67		0.838	0.915	4.00	0.986	pCi/L	02/14/17 10:22	02/20/17 21:38	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-1.13	U	7.43	7.43	20.0	13.3	pCi/L	01/26/17 14:59	01/26/17 19:50	1
Potassium-40	-94.0	U	157	157		215	pCi/L	01/26/17 14:59	01/26/17 19:50	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.177	U	0.227	0.228	1.00	0.378	pCi/L	01/30/17 10:23	02/21/17 21:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.1		40 - 110					01/30/17 10:23	02/21/17 21:06	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.179	U	0.288	0.289	1.00	0.486	pCi/L	01/30/17 13:37	02/20/17 11:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.1		40 - 110					01/30/17 13:37	02/20/17 11:20	1
Y Carrier	78.5		40 - 110					01/30/17 13:37	02/20/17 11:20	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.00912	U	0.144	0.144	3.00	0.262	pCi/L	01/31/17 11:55	02/13/17 17:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					01/31/17 11:55	02/13/17 17:08	1
Y Carrier	94.6		40 - 110					01/31/17 11:55	02/13/17 17:08	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	5.86	U	162	162	500	291	pCi/L	02/21/17 12:33	02/22/17 01:11	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.157		0.136	0.137	1.00	0.145	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.3		30 - 110					02/01/17 09:37	02/14/17 15:44	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Client Sample ID: Outfall018_20170123_Comp

Lab Sample ID: 440-174317-1

Date Collected: 01/23/17 11:00

Matrix: Water

Date Received: 01/23/17 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	292256	02/14/17 10:22	MRB	TAL SL
Total/NA	Analysis	900.0		1			293387	02/20/17 21:38	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	289283	01/26/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			289226	01/26/17 19:50	KLS	TAL SL
Total/NA	Prep	PrecSep-21			999.41 mL	1.0 g	290058	01/30/17 10:23	AS	TAL SL
Total/NA	Analysis	903.0		1			293679	02/21/17 21:06	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.41 mL	1.0 g	290115	01/30/17 13:37	AS	TAL SL
Total/NA	Analysis	904.0		1			293387	02/20/17 11:20	RTM	TAL SL
Total/NA	Prep	PrecSep-7			999.34 mL	1.0 g	290301	01/31/17 11:55	BME	TAL SL
Total/NA	Analysis	905		1			292016	02/13/17 17:08	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			75.4 mL	1.0 g	293701	02/21/17 12:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			293915	02/22/17 01:11	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.04 mL	1.0 mL	290556	02/01/17 09:37	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			292520	02/14/17 15:44	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-292256/1-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292256

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	0.9375		0.646	0.654	3.00	0.930	pCi/L	02/14/17 10:22	02/20/17 06:20	1
Gross Beta	0.7595	U	0.541	0.546	4.00	0.814	pCi/L	02/14/17 10:22	02/20/17 06:20	1

Lab Sample ID: LCS 160-292256/2-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.84		6.18	3.00	1.76	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-292256/3-A
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.1	88.28		9.35	4.00	0.832	pCi/L	97	75 - 125

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	1.10	U	49.9	28.11	F1	4.52	3.00	1.67	pCi/L	56	60 - 140

Lab Sample ID: 440-174317-1 MSBT
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	3.67		91.1	89.43		9.48	4.00	1.08	pCi/L	94	60 - 140

Lab Sample ID: 440-174317-1 MSBTD
Matrix: Water
Analysis Batch: 293437

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Beta	3.67		91.1	87.05		9.23	4.00	1.10	pCi/L	92	60 - 140	0.13	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 292256

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	1.10	U	49.9	29.64	F1	4.89	3.00	1.70	pCi/L	59	60 - 140	0.16	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-289283/1-A
Matrix: Water
Analysis Batch: 289221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 289283

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.610	U	7.91	7.91	20.0	13.9	pCi/L	01/26/17 14:59	01/26/17 18:11	1
Potassium-40	10.87	U	58.2	58.2		106	pCi/L	01/26/17 14:59	01/26/17 18:11	1

Lab Sample ID: LCS 160-289283/2-A
Matrix: Water
Analysis Batch: 289226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	130000		15000		400	pCi/L	95	90 - 111
Cesium-137	47100	46960		4710	20.0	130	pCi/L	100	90 - 111
Cobalt-60	40100	39620		3920		70.8	pCi/L	99	89 - 110

Lab Sample ID: 440-174234-AK-1-B DU
Matrix: Water
Analysis Batch: 289211

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 289283

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	1.26	U	-1.457	U	8.94	20.0	15.8	pCi/L	0.14	1
Potassium-40	-82.0	U	36.28	U	101		170	pCi/L	0.50	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-290058/1-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290058

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05389	U	0.113	0.113	1.00	0.282	pCi/L	01/30/17 10:23	02/21/17 20:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					01/30/17 10:23	02/21/17 20:55	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-290058/2-A
Matrix: Water
Analysis Batch: 293668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	6.01	7.329		1.04	1.00	0.310	pCi/L	122	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	84.1		40 - 110							

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.177	U	6.01	7.673		1.11	1.00	0.362	pCi/L	128	75 - 138
Carrier	%Yield	MS Qualifier	Limits								
Ba Carrier	86.4		40 - 110								

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 293679

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290058

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.177	U	6.01	7.775		1.24	1.00	0.541	pCi/L	129	75 - 138	0.04	1
Carrier	%Yield	MSD Qualifier	Limits										
Ba Carrier	61.1		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-290115/1-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290115

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1504	U	0.263	0.264	1.00	0.447	pCi/L	01/30/17 13:37	02/20/17 11:17	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	83.8		40 - 110							
Y Carrier	82.6		40 - 110							

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-290115/2-A
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	16.70		1.82	1.00	0.428	pCi/L	121	56 - 140
		LCS %Yield	LCS Qualifier						
Carrier									
Ba Carrier	84.1							40 - 110	
Y Carrier	81.5							40 - 110	

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.179	U	13.8	15.35		1.68	1.00	0.426	pCi/L	111	45 - 150
		MS %Yield	MS Qualifier								
Carrier											
Ba Carrier	86.4									40 - 110	
Y Carrier	84.1									40 - 110	

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 293387

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290115

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.179	U	13.8	17.08		1.95	1.00	0.616	pCi/L	123	45 - 150	0.48	1
		MSD %Yield	MSD Qualifier										
Carrier													
Ba Carrier	61.1											40 - 110	
Y Carrier	83.0											40 - 110	

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-290301/1-A
Matrix: Water
Analysis Batch: 292018

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290301

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2620	U	0.360	0.360	3.00	0.599	pCi/L	01/31/17 11:55	02/13/17 15:14	1
		MB %Yield	MB Qualifier					Prepared	Analyzed	Dil Fac
Carrier										
Sr Carrier	84.3								40 - 110	
Y Carrier	98.7								40 - 110	

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-290301/2-A
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	17.0	17.15		1.74	3.00	0.500	pCi/L	101	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	87.2		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 292016

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.00912	U	8.50	7.661		0.786	3.00	0.236	pCi/L	90	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	82.6		40 - 110								
Y Carrier	108		40 - 110								

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 292017

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290301

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.00912	U	8.51	7.960		0.818	3.00	0.261	pCi/L	94	19 - 150	0.19	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	86.7		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-293701/1-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293701

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-35.59	U	165	165	500	307	pCi/L	02/21/17 12:33	02/21/17 22:33	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-293701/2-A
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2470		395	500	296	pCi/L	84	74 - 114

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	5.86	U	3930	3650		503	500	298	pCi/L	93	67 - 130

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 293915

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 293701

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	5.86	U	3920	3894		528	500	303	pCi/L	99	67 - 130	0.24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-290556/1-A
Matrix: Water
Analysis Batch: 292509

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 290556

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.04667	U	0.1007	0.1008	1.00	0.155	pCi/L	02/01/17 09:37	02/14/17 15:44	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					02/01/17 09:37	02/14/17 15:44	1

Lab Sample ID: LCS 160-290556/2-A
Matrix: Water
Analysis Batch: 292510

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.71		1.84	1.00	0.251	pCi/L	100	84 - 120
Uranium-238	13.0	12.61		1.83	1.00	0.229	pCi/L	97	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	45.3		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-174110-F-1-F MSD
Matrix: Water
Analysis Batch: 292515

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	-0.112	U	63.4	65.68		8.01	1.00	0.827	pCi/L	104	65 - 146	0.04	1	
Uranium-238	-0.0670	U	64.8	68.96		8.29	1.00	0.581	pCi/L	106	68 - 143	0.29	1	
Tracer		MSD MSD		MSD MSD		MSD MSD		MSD MSD		MSD MSD		MSD MSD		
	%Yield	Qualifier	Limits											
Uranium-232	84.1		30 - 110											

Lab Sample ID: 440-174317-1 MS
Matrix: Water
Analysis Batch: 292521

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.101	U	12.7	12.90		1.57	1.00	0.142	pCi/L	101	65 - 146			
Uranium-238	0.0621	U	13.0	13.81		1.65	1.00	0.152	pCi/L	106	68 - 143			
Tracer		MS MS		MS MS		MS MS		MS MS		MS MS		MS MS		
	%Yield	Qualifier	Limits											
Uranium-232	78.6		30 - 110											

Lab Sample ID: 440-174317-1 MSD
Matrix: Water
Analysis Batch: 292522

Client Sample ID: Outfall018_20170123_Comp
Prep Type: Total/NA
Prep Batch: 290556

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	RER		
Uranium-234	0.101	U	12.7	12.23		1.48	1.00	0.106	pCi/L	96	65 - 146	0.22	1	
Uranium-238	0.0621	U	13.0	12.69		1.52	1.00	0.0696	pCi/L	98	68 - 143	0.35	1	
Tracer		MSD MSD		MSD MSD		MSD MSD		MSD MSD		MSD MSD		MSD MSD		
	%Yield	Qualifier	Limits											
Uranium-232	86.7		30 - 110											

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Rad

Prep Batch: 289283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-289283/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-289283/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-174234-AK-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 290058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	PrecSep-21	
MB 160-290058/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-290058/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	PrecSep-21	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	PrecSep-21	

Prep Batch: 290115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	PrecSep_0	
MB 160-290115/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-290115/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	PrecSep_0	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	PrecSep_0	

Prep Batch: 290301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	PrecSep-7	
MB 160-290301/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-290301/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	PrecSep-7	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 290556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	ExtChrom	
MB 160-290556/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-290556/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-174110-F-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	ExtChrom	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	ExtChrom	

Prep Batch: 292256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	Evaporation	
MB 160-292256/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-292256/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-292256/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	Evaporation	
440-174317-1 MSBT	Outfall018_20170123_Comp	Total/NA	Water	Evaporation	
440-174317-1 MSBTD	Outfall018_20170123_Comp	Total/NA	Water	Evaporation	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	Evaporation	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Rad (Continued)

Prep Batch: 293701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174317-1	Outfall018_20170123_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-293701/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-293701/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-174317-1 MS	Outfall018_20170123_Comp	Total/NA	Water	LSC_Dist_Susp	
440-174317-1 MSD	Outfall018_20170123_Comp	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-17 *
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Sampling Event	Sample Delivery Group	Sample Date	Sample Time	Sample s Included	Revised Sample Date	Revised Sample Time	Revised Sample s Included
OF001 - Annual	440-174234-1	1/20/2017	14:57	Outfall001_20170120_Comp, Outfall001_20170120_Comp_F	1/21/2017	11:40	Outfall001_20170121_Comp, Outfall001_20170121_Comp_F
OF001 - Annual	440-174234-3	1/20/2017	14:57	Outfall001_20170120_Comp (radchem), Outfall001_20170120_Comp_Extra	1/21/2017	11:40	Outfall001_20170121_Comp (radchem), Outfall001_20170121_Comp_Extra
OF002 - Routine	440-174235-1	1/20/2017	19:28	Outfall002_20170120_Comp, Outfall002_20170120_Comp_F	1/21/2017	14:00	Outfall002_20170121_Comp, Outfall002_20170121_Comp_F
OF002 - Routine	440-174235-2	1/20/2017	19:28	Outfall002_20170120_Comp (radchem)	1/21/2017	14:00	Outfall002_20170121_Comp (radchem)
OF002 - Routine	440-174235-3	1/20/2017	19:28	Outfall002_20170120_Comp_Extra	1/21/2017	14:00	Outfall002_20170121_Comp_Extra
OF002 - Annual	440-174312-1	1/22/2017	22:42	Outfall002_20170122_Comp, Outfall002_20170122_Comp_F	1/23/2017	13:10	Outfall002_20170123_Comp, Outfall002_20170123_Comp_F
OF002 - Annual	440-174312-2	1/22/2017	22:42	Outfall002_20170122_Comp (radchem)	1/23/2017	13:10	Outfall002_20170123_Comp (radchem)
OF006 - Annual	440-174321-1	1/22/2017	22:21	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F	1/23/2017	12:00	Outfall006_20170123_Comp, Outfall006_20170123_Comp_F
OF006 - Annual	440-174321-2	1/22/2017	22:21	Outfall006_20170123_Comp (radchem)	1/23/2017	12:00	Outfall006_20170123_Comp (radchem)
OF008 - Annual	440-174236-1	1/20/2017	14:21	Outfall008_20170120_Comp, Outfall008_20170120_Comp_F	1/21/2017	12:30	Outfall008_20170121_Comp, Outfall008_20170121_Comp_F
OF008 - Annual	440-174236-2	1/20/2017	14:21	Outfall008_20170120_Comp (radchem)	1/21/2017	12:30	Outfall008_20170121_Comp (radchem)
OF008 - Annual	440-174236-3	1/20/2017	14:21	Outfall008_20170120_Comp_Extra	1/21/2017	12:30	Outfall008_20170121_Comp_Extra
OF009 - Routine	440-174110-1	1/20/2017	2:04	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F	1/20/2017	9:30	Outfall009_20170120_Comp, Outfall009_20170120_Comp_F
OF009 - Routine	440-174110-2	1/20/2017	2:04	Outfall009_20170120_Comp (radchem)	1/20/2017	9:30	Outfall009_20170120_Comp (radchem)
OF009 - Routine	440-174110-3	1/20/2017	2:04	Outfall009_20170120_Comp_Extra	1/20/2017	9:30	Outfall009_20170120_Comp_Extra
OF009 - Routine	440-174237-1	1/21/2017	11:46	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F	1/21/2017	15:15	Outfall009_20170121_Comp, Outfall009_20170121_Comp_F
OF009 - Routine	440-174237-2	1/21/2017	11:46	Outfall009_20170121_Comp (radchem)	1/21/2017	15:15	Outfall009_20170121_Comp (radchem)
OF009 - Routine	440-174237-3	1/21/2017	11:46	Outfall009_20170121_Comp_Extra	1/21/2017	15:15	Outfall009_20170121_Comp_Extra
OF011 - Annual	440-174433-1	1/22/2017	22:56	Outfall011_20170122_Comp, Outfall011_20170122_Comp_F	1/24/2017	9:00	Outfall011_20170124_Comp, Outfall011_20170124_Comp_F
OF011 - Annual	440-174433-2	1/22/2017	22:56	Outfall011_20170122_Comp	1/24/2017	9:00	Outfall011_20170124_Comp
OF018 - Annual	440-174317-1	1/22/2017	18:36	Outfall018_20170122_Comp, Outfall018_20170122_Comp_F	1/23/2017	11:00	Outfall018_20170123_Comp, Outfall018_20170123_Comp_F
OF018 - Annual	440-174317-2	1/22/2017	18:36	Outfall018_20170122_Comp (radchem)	1/23/2017	11:00	Outfall018_20170123_Comp (radchem)



Chain of Custody Record



Client Information (Sub Contract Lab) Company: TestAmerica Laboratories, Inc. Address: 13715 Rider Trail North, City: Earth City State: MO, Zip: 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email: Project Name: Annual Outfall 018 Comp SMC:		Lab PM: Patel, Urvashi E-Mail: urvashi.patel@testamericainc.com State of Origin: California Job # 440-174317-2 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AAHQ2 P - NaCO3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Doublehydrate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)	
Due Date Requested: 2/2/2017 TAT Requested (days): PO #: WO #: Project #: 44009879 SMC:		Analysis Requested: 900 Evaporation Gross Alpha/Beta 901, C/Fill, Geo, 0 K-40 and Cesium-137 903, Precip, 21 Radium-226 904, Precip, 0 Radium-226 905, SFO/Precip, 7 Strontium-90 906, SFC, Dist, Susp, Tritium A01R, URE/Chrom, Actin Total Uranium Total Number of containers:	
Sample Identification - Client ID (Lab ID) Outfall018_20170122_Comp (440-174317-1) Outfall018_20170122_Comp (440-174317-1MS) Outfall018_20170122_Comp (440-174317-1MSD)		Special Instructions/Note: Boiling SSFL, DO NOT FILTER; use prep date from preservation Boiling SSFL, DO NOT FILTER; use prep date from preservation Boiling SSFL, DO NOT FILTER; use prep date from preservation	
Sample Date: 1/22/17 Sample Time: 18:36 Pacific Sample Type (C=Comp, G=grab): MS Matrix (W=Water, O=Organic, S=Soil, A=Asphalt, B=Blood, C=Cement, D=Dirt, F=Fertilizer, G=Gravel, H=Hair, I=Ice, L=Liquid, M=Metal, N=Nail, P=Paint, R=Resin, S=Soil, T=Tea, U=Urine, V=Vegetable, W=Water, X=Xenon, Y=Yield, Z=Zirconium)		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 900 Evaporation Gross Alpha/Beta 901, C/Fill, Geo, 0 K-40 and Cesium-137 903, Precip, 21 Radium-226 904, Precip, 0 Radium-226 905, SFO/Precip, 7 Strontium-90 906, SFC, Dist, Susp, Tritium A01R, URE/Chrom, Actin Total Uranium	
Possible Hazard Identification Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/OC Requirements:	
Relinquished by: Van Bauld Date/Time: 1/24/17 17:00 Company: TAT		Received by: [Signature] Date/Time: 1/24/17 17:00 Company:	
Relinquished by: [Signature] Date/Time: 1/25/17 09:20 Company: TAT		Received by: [Signature] Date/Time: 1/25/17 09:20 Company:	
Relinquished by: [Signature] Date/Time: [Blank] Company:		Received by: [Signature] Date/Time: [Blank] Company:	
Custody Seals Intact Yes <input type="checkbox"/> No <input type="checkbox"/>		Custody Seal No.	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174317-2

Login Number: 174317

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174317-2

Login Number: 174317

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 01/25/17 02:23 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-174317-1	Outfall018_20170123_Comp	86.1
440-174317-1 MS	Outfall018_20170123_Comp	86.4
440-174317-1 MSD	Outfall018_20170123_Comp	61.1
LCS 160-290058/2-A	Lab Control Sample	84.1
MB 160-290058/1-A	Method Blank	83.8

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-174317-1	Outfall018_20170123_Comp	86.1	78.5
440-174317-1 MS	Outfall018_20170123_Comp	86.4	84.1
440-174317-1 MSD	Outfall018_20170123_Comp	61.1	83.0
LCS 160-290115/2-A	Lab Control Sample	84.1	81.5
MB 160-290115/1-A	Method Blank	83.8	82.6

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-174317-1	Outfall018_20170123_Comp	83.0	94.6
440-174317-1 MS	Outfall018_20170123_Comp	82.6	108
440-174317-1 MSD	Outfall018_20170123_Comp	86.7	97.2
LCS 160-290301/2-A	Lab Control Sample	87.2	92.7
MB 160-290301/1-A	Method Blank	84.3	98.7

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174110-F-1-F MSD	Matrix Spike Duplicate	84.1
440-174317-1	Outfall018_20170123_Comp	83.3
440-174317-1 MS	Outfall018_20170123_Comp	78.6

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 018 Comp

TestAmerica Job ID: 440-174317-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-174317-1 MSD	Outfall018_20170123_Comp	86.7
LCS 160-290556/2-A	Lab Control Sample	45.3
MB 160-290556/1-A	Method Blank	82.2

Tracer/Carrier Legend

U-232 = Uranium-232

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175849-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 27, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175849-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170207_ Grab	440-175849-1	N/A	Water	2/7/17 10:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175849-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170207 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA Methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis and no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401758491

Analysis Method E120.1

Sample Name Outfall018_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-175849-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	130	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall018_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-175849-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.2	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall018_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-175849-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall018_20170207_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/7/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-175849-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175849-1

Client Project/Site: Routine Outfall 018 Grab

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/23/2017 5:12:13 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/23/2017 5:12:13 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175849-1	Outfall018_20170207_Grab	Water	02/07/17 10:00	02/07/17 15:10
440-175849-3	TB-20170207	Water	02/07/17 10:00	02/07/17 15:10

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Job ID: 440-175849-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-175849-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Receipt

The samples were received on 2/7/2017 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 1.0° C, 1.6° C, 1.7° C, 2.5° C, 2.7° C and 3.1° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-389416 and analytical batch 440-389727. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Client Sample ID: Outfall018_20170207_Grab

Lab Sample ID: 440-175849-1

Date Collected: 02/07/17 10:00

Matrix: Water

Date Received: 02/07/17 15:10

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 11:24	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 11:24	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 11:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120					02/10/17 11:24	1
Dibromofluoromethane (Surr)	109		76 - 132					02/10/17 11:24	1
Toluene-d8 (Surr)	103		80 - 128					02/10/17 11:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.2	1.5	mg/L		02/20/17 18:47	02/22/17 00:11	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	130		1.0	1.0	umhos/cm			02/14/17 11:00	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/08/17 09:56	1

Client Sample ID: TB-20170207

Lab Sample ID: 440-175849-3

Date Collected: 02/07/17 10:00

Matrix: Water

Date Received: 02/07/17 15:10

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 11:53	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 11:53	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 11:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		80 - 120					02/10/17 11:53	1
Dibromofluoromethane (Surr)	108		76 - 132					02/10/17 11:53	1
Toluene-d8 (Surr)	104		80 - 128					02/10/17 11:53	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Client Sample ID: Outfall018_20170207_Grab

Lab Sample ID: 440-175849-1

Date Collected: 02/07/17 10:00

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	387596	02/10/17 11:24	WC	TAL IRV
Total/NA	Analysis	120.1		1			388197	02/14/17 11:00	XL	TAL IRV
Total/NA	Prep	1664A			965 mL	1000 mL	389416	02/20/17 18:47	JSS	TAL IRV
Total/NA	Analysis	1664A		1			389727	02/22/17 00:11	BAW	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	387196	02/08/17 09:56	RB	TAL IRV

Client Sample ID: TB-20170207

Lab Sample ID: 440-175849-3

Date Collected: 02/07/17 10:00

Matrix: Water

Date Received: 02/07/17 15:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	387596	02/10/17 11:53	WC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387596/4
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/10/17 08:27	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/10/17 08:27	1
Trichloroethene	ND		0.50	0.25	ug/L			02/10/17 08:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120		02/10/17 08:27	1
Dibromofluoromethane (Surr)	105		76 - 132		02/10/17 08:27	1
Toluene-d8 (Surr)	103		80 - 128		02/10/17 08:27	1

Lab Sample ID: LCS 440-387596/5
Matrix: Water
Analysis Batch: 387596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	27.2		ug/L		109	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.1		ug/L		100	63 - 130
1,1,2-Trichloroethane	25.0	28.0		ug/L		112	70 - 130
1,1-Dichloroethane	25.0	25.6		ug/L		102	64 - 130
1,1-Dichloroethene	25.0	25.2		ug/L		101	70 - 130
1,2-Dichlorobenzene	25.0	25.5		ug/L		102	70 - 130
1,2-Dichloroethane	25.0	26.5		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	24.3		ug/L		97	67 - 130
1,3-Dichlorobenzene	25.0	27.2		ug/L		109	70 - 130
1,4-Dichlorobenzene	25.0	25.0		ug/L		100	70 - 130
Benzene	25.0	24.8		ug/L		99	68 - 130
Bromoform	25.0	27.9		ug/L		112	60 - 148
Bromomethane	25.0	23.2		ug/L		93	64 - 139
Carbon tetrachloride	25.0	27.9		ug/L		111	60 - 150
Chlorobenzene	25.0	25.4		ug/L		102	70 - 130
Dibromochloromethane	25.0	27.8		ug/L		111	69 - 145
Chloroethane	25.0	24.5		ug/L		98	64 - 135
Chloroform	25.0	26.3		ug/L		105	70 - 130
Chloromethane	25.0	25.0		ug/L		100	47 - 140
cis-1,3-Dichloropropene	25.0	26.7		ug/L		107	70 - 133
Bromodichloromethane	25.0	26.9		ug/L		107	70 - 132
Ethylbenzene	25.0	25.2		ug/L		101	70 - 130
Methylene Chloride	25.0	24.5		ug/L		98	52 - 130
Tetrachloroethene	25.0	27.8		ug/L		111	70 - 130
Toluene	25.0	25.1		ug/L		100	70 - 130
trans-1,2-Dichloroethene	25.0	26.7		ug/L		107	70 - 130
trans-1,3-Dichloropropene	25.0	26.3		ug/L		105	70 - 132
Vinyl chloride	25.0	22.4		ug/L		90	59 - 133
Trichloroethene	25.0	27.0		ug/L		108	70 - 130
cis-1,2-Dichloroethene	25.0	26.8		ug/L		107	70 - 133
Naphthalene	25.0	28.1		ug/L		112	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-387596/5

Matrix: Water

Analysis Batch: 387596

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	106		76 - 132
Toluene-d8 (Surr)	103		80 - 128

Lab Sample ID: 440-175530-C-1 MS

Matrix: Water

Analysis Batch: 387596

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
1,1,1-Trichloroethane	ND		25.0	28.0		ug/L		112	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	26.3		ug/L		105	63 - 130
1,1,2-Trichloroethane	ND		25.0	28.9		ug/L		116	70 - 130
1,1-Dichloroethane	ND		25.0	27.1		ug/L		108	65 - 130
1,1-Dichloroethene	ND		25.0	25.9		ug/L		104	70 - 130
1,2-Dichlorobenzene	ND		25.0	26.6		ug/L		106	70 - 130
1,2-Dichloroethane	ND		25.0	28.4		ug/L		114	56 - 146
1,2-Dichloropropane	ND		25.0	26.2		ug/L		105	69 - 130
1,3-Dichlorobenzene	ND		25.0	28.1		ug/L		112	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		104	70 - 130
Benzene	ND		25.0	25.9		ug/L		103	66 - 130
Bromoform	ND		25.0	28.9		ug/L		116	59 - 150
Bromomethane	ND		25.0	24.4		ug/L		97	62 - 131
Carbon tetrachloride	ND		25.0	29.2		ug/L		117	60 - 150
Chlorobenzene	ND		25.0	25.8		ug/L		103	70 - 130
Dibromochloromethane	ND		25.0	28.5		ug/L		114	70 - 148
Chloroethane	ND		25.0	25.7		ug/L		103	68 - 130
Chloroform	ND		25.0	27.6		ug/L		110	70 - 130
Chloromethane	ND		25.0	25.6		ug/L		102	39 - 144
cis-1,3-Dichloropropene	ND		25.0	27.5		ug/L		110	70 - 133
Bromodichloromethane	ND		25.0	28.4		ug/L		114	70 - 138
Ethylbenzene	ND		25.0	25.6		ug/L		102	70 - 130
Methylene Chloride	ND		25.0	26.4		ug/L		106	52 - 130
Tetrachloroethene	ND		25.0	27.7		ug/L		111	70 - 137
Toluene	ND		25.0	25.5		ug/L		102	70 - 130
trans-1,2-Dichloroethene	ND		25.0	27.8		ug/L		111	70 - 130
trans-1,3-Dichloropropene	ND		25.0	27.6		ug/L		110	70 - 138
Vinyl chloride	ND		25.0	22.4		ug/L		90	50 - 137
Trichloroethene	ND		25.0	28.7		ug/L		115	70 - 130
cis-1,2-Dichloroethene	ND		25.0	28.1		ug/L		113	70 - 130
Naphthalene	ND		25.0	29.7		ug/L		119	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	101		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-175530-C-1 MSD

Matrix: Water

Analysis Batch: 387596

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,1,1-Trichloroethane	ND		25.0	27.7		ug/L		111	70 - 130	1	20
1,1,1,2-Tetrachloroethane	ND		25.0	25.4		ug/L		102	63 - 130	3	30
1,1,2-Trichloroethane	ND		25.0	28.8		ug/L		115	70 - 130	0	25
1,1-Dichloroethane	ND		25.0	26.7		ug/L		107	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	26.3		ug/L		105	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	28.5		ug/L		114	56 - 146	0	20
1,2-Dichloropropane	ND		25.0	26.1		ug/L		105	69 - 130	0	20
1,3-Dichlorobenzene	ND		25.0	27.9		ug/L		112	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130	1	20
Benzene	ND		25.0	25.4		ug/L		102	66 - 130	2	20
Bromoform	ND		25.0	28.9		ug/L		116	59 - 150	0	25
Bromomethane	ND		25.0	24.4		ug/L		98	62 - 131	0	25
Carbon tetrachloride	ND		25.0	28.6		ug/L		115	60 - 150	2	25
Chlorobenzene	ND		25.0	25.7		ug/L		103	70 - 130	0	20
Dibromochloromethane	ND		25.0	28.7		ug/L		115	70 - 148	1	25
Chloroethane	ND		25.0	25.3		ug/L		101	68 - 130	1	25
Chloroform	ND		25.0	26.9		ug/L		108	70 - 130	2	20
Chloromethane	ND		25.0	26.9		ug/L		107	39 - 144	5	25
cis-1,3-Dichloropropene	ND		25.0	28.0		ug/L		112	70 - 133	2	20
Bromodichloromethane	ND		25.0	28.6		ug/L		114	70 - 138	0	20
Ethylbenzene	ND		25.0	25.7		ug/L		103	70 - 130	0	20
Methylene Chloride	ND		25.0	25.7		ug/L		103	52 - 130	3	20
Tetrachloroethene	ND		25.0	27.7		ug/L		111	70 - 137	0	20
Toluene	ND		25.0	25.7		ug/L		103	70 - 130	1	20
trans-1,2-Dichloroethene	ND		25.0	27.1		ug/L		108	70 - 130	2	20
trans-1,3-Dichloropropene	ND		25.0	27.0		ug/L		108	70 - 138	2	25
Vinyl chloride	ND		25.0	22.4		ug/L		89	50 - 137	0	30
Trichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	2	20
cis-1,2-Dichloroethene	ND		25.0	28.0		ug/L		112	70 - 130	0	20
Naphthalene	ND		25.0	28.7		ug/L		115	60 - 140	3	30

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	95		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	101		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-388197/3

Matrix: Water

Analysis Batch: 388197

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Specific Conductance	ND		1.0	1.0	umhos/cm			02/14/17 11:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-388197/4
Matrix: Water
Analysis Batch: 388197

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	778		umhos/cm		101	90 - 110

Lab Sample ID: 440-176291-A-1 DU
Matrix: Water
Analysis Batch: 388197

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	85		83.8		umhos/cm		0.8	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-389416/1-A
Matrix: Water
Analysis Batch: 389727

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389416

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/20/17 18:47	02/22/17 00:11	1

Lab Sample ID: LCS 440-389416/2-A
Matrix: Water
Analysis Batch: 389727

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389416

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.5		mg/L		89	78 - 114

Lab Sample ID: LCSD 440-389416/3-A
Matrix: Water
Analysis Batch: 389727

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 389416

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	36.9		mg/L		92	78 - 114	4	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

GC/MS VOA

Analysis Batch: 387596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175849-1	Outfall018_20170207_Grab	Total/NA	Water	624	
440-175849-3	TB-20170207	Total/NA	Water	624	
MB 440-387596/4	Method Blank	Total/NA	Water	624	
LCS 440-387596/5	Lab Control Sample	Total/NA	Water	624	
440-175530-C-1 MS	Matrix Spike	Total/NA	Water	624	
440-175530-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 387196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175849-1	Outfall018_20170207_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 388197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175849-1	Outfall018_20170207_Grab	Total/NA	Water	120.1	
MB 440-388197/3	Method Blank	Total/NA	Water	120.1	
LCS 440-388197/4	Lab Control Sample	Total/NA	Water	120.1	
440-176291-A-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 389416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175849-1	Outfall018_20170207_Grab	Total/NA	Water	1664A	
MB 440-389416/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-389416/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-389416/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 389727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175849-1	Outfall018_20170207_Grab	Total/NA	Water	1664A	389416
MB 440-389416/1-A	Method Blank	Total/NA	Water	1664A	389416
LCS 440-389416/2-A	Lab Control Sample	Total/NA	Water	1664A	389416
LCSD 440-389416/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	389416

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-175849-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175849-1

Login Number: 175849

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175978-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-175978-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170208_Comp	440-175978-3	N/A	Water	2/8/17 9:15 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, EPA-821-R-02-013, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall018_20170208_Comp_F	440-175978-1	N/A	Water	2/8/17 9:15 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175978-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

Analysis of chronic toxicity (bioassay Method EPA821-R-02-013) was subcontracted to Aquatic Bioassay and Consulting Laboratories. Field and laboratory personnel signed and dated the COC. Sample receipt information was not included in the data package. No sample results were qualified.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8,9-HxCDF, 2,3,7,8-TCDF, OCDD, and OCDF, and detects for totals TCDF, HpCDD, HpCDF, HxCDD, and HxCDF. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD and TCDF in the method blank were the same peaks comprising the totals in sample Outfall018_20170208_Comp. The results for totals HpCDD and TCDF were qualified as nondetected (U).



The reviewer verified that peaks comprising the result for the remaining total in the sample included more peaks than the method blank total. The sample result for total HxCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification with the exception of data flagged as EMPC results by the laboratory. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Totals HxCDD and HxCDF containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8 AND 245.1— METALS AND MERCURY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 2, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall018_20170208_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 5 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

It should be noted that the selenium initial calibration raw data associated with the filtered sample selenium analysis is not available in the data package. The selenium CRQL, ICV and CCV results for the filtered sample analysis are also not available in the raw data. QC summary forms are included in the data package.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results. It should be noted that a dissolved method blank was not analyzed for dissolved 200.7 analytes.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20170208_Comp for the ICP/MS method only. MS/MSD analyses were not performed on sample Outfall018_20170208_Comp_F. Results were not



assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

It should be noted that the ICP/MS selenium filtered sample analysis raw data is not available in the data package.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 5, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration



verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The target compound was not detected in method blank.

V.3.2 LABORATORY CONTROL SAMPLES

Recovery of alpha BHC was within the laboratory control limits.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy based on the LCS results.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Marcia Hilchey of MEC^X reviewed the SDG on March 30 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met for applicable target compounds. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits. The reviewer noted target compound 2,4-dinitrotoluene was not spiked in the LCS/LCSD.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas, with one exception. The recovery of 14% for perylene-d12 in the sample did not affect reported sample data, as the internal standard was not associated with the requested target compounds.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Methods 180.0, 300.0 and 821-R-02-013, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B and 5540C, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

VIII.1. HOLDING TIMES

The sample was received at the subcontracted laboratory for the chronic toxicity analysis past the 36 hour holding time and was analyzed 16 hours past the holding time requirement. The result for chronic toxicity was qualified as estimated (J). The remaining analytical holding times as listed below were met:

- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for chloride, sulfate and ammonia
- 28 Days for TOC
- 48 hours for BOD
- 48 hours for turbidity
- 48 hours for MBAS
- 48 hours for nitrate and nitrite as N

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within



the laboratory control limits of 50-150%. Analytical balance calibration logs were provided by the laboratory. For chronic toxicity, instruments were calibrated as per the manufacturer requirements and standard reference toxicant testing was performed to verify culture health and sensitivity.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were within the laboratory control limits.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Results reported below the RL and above the MDL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit requirements. Reported nondetects are valid to the MDL.

It should be noted that no raw data was presented in the SDG for the turbidity, TDS, TSS and BOD analyses.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401759781

Analysis Method E1613B

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000042	0.00010	0.00000017	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000089	0.00010	0.00000037	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000025	0.000050	0.00000016	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000088	0.000050	0.00000036	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000050	0.00000018	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000065	0.000050	0.00000014	ug/L	J,DX	J	DNQ
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000056	0.000050	0.00000016	ug/L	J,DXq	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000058	0.000050	0.00000013	ug/L	J,DX	J	DNQ
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000068	0.000050	0.00000017	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000036	0.000050	0.00000011	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000065	0.000050	0.00000013	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000027	0.000050	0.00000016	ug/L	J,DXq	J	DNQ
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000041	0.000050	0.00000016	ug/L	J,DX	J	DNQ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000031	0.000050	0.00000011	ug/L	J,DXq	J	DNQ
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000037	0.000050	0.00000016	ug/L	J,DX	J	DNQ
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000070	0.000010	0.00000012	ug/L	J,DXMB	U	B
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000020	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000016	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.0000044	0.000050	0.00000017	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000018	0.000050	0.00000036	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000023	0.000050	0.00000012	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000035	0.000050	0.00000015	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000064	0.000050	0.00000016	ug/L	J,DXq	J	DNQ
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000041	0.000050	0.00000016	ug/L	J,DX	J	DNQ
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000070	0.000010	0.00000012	ug/L	J,DXMB	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000016	ug/L	U	U	

Analysis Method E180.1

Sample Name	Outfall018_20170208_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/8/2017 9:15:00 AM		Validation Level:	8					
Lab Sample Name:	440-175978-3								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	8.5	0.10	0.040	NTU			

Analysis Method E200.8

Sample Name	Outfall018_20170208_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/8/2017 9:15:00 AM		Validation Level:	8					
Lab Sample Name:	440-175978-3								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.9	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Sample Name	Outfall018_20170208_Comp_F		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/8/2017 9:15:00 AM		Validation Level:	8					
Lab Sample Name:	440-175978-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.8	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H

Analysis Method E245.1

Sample Name	Outfall018_20170208_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/8/2017 9:15:00 AM		Validation Level:	8					
Lab Sample Name:	440-175978-3								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall018_20170208_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 9:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175978-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E300**Sample Name** Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 9:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	5.3	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.93	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.93	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	24	0.50	0.25	mg/L			

Analysis Method E314.0**Sample Name** Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 9:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 9:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0051	0.0025	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/8/2017 9:15:00 AM **Validation Level:** 8**Lab Sample Name:** 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	5.88	0.490	ug/L	U	U	

Analysis Method E625

2,4-Dinitrotoluene	N	121-14-2	ND	4.90	1.96	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.90	1.96	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	4.90	0.980	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	4.90	0.980	ug/L	U	U	

Analysis Method EPA-821-R-02-013

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chronic Toxicity, Selenastrum	N	CHRTOXSELEN A	10.91			% SURV		J	H

Analysis Method SM2540C

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	120	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	5.1	1.0	0.50	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method **SM4500-NH3G**

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	BOD		1.8	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.23	0.10	0.050	mg/L			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175978-1

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 3:14:43 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 3:14:43 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175978-1	Outfall018_20170208_Comp_F	Water	02/08/17 09:15	02/08/17 13:30
440-175978-3	Outfall018_20170208_Comp	Water	02/08/17 09:15	02/08/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Job ID: 440-175978-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-175978-1

Comments

No additional comments.

Receipt

The samples were received on 2/8/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.1° C, 1.2° C, 1.4° C, 1.6° C, 1.7° C, 2.4° C, 2.4° C and 2.9° C.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-387389 and analytical batch 440-388032. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: Internal standard (ISTD) response for perylene-d12 for the following samples was outside acceptance criteria: Outfall018_20170208_Comp (440-175978-3). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Method Chronic-Selenestrum: This method was subcontracted to Aquatic Bioassay - Ventura, CA. The subcontract laboratory certification is different from that of the facility issuing the final report.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Client Sample ID: Outfall018_20170208_Comp_F

Lab Sample ID: 440-175978-1

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L	-	02/14/17 18:13	02/15/17 12:51	1
Copper	2.8	QP	2.0	0.50	ug/L	-	02/14/17 18:13	02/15/17 12:51	1
Lead	ND	QP	1.0	0.50	ug/L	-	02/14/17 18:13	02/15/17 12:51	1
Selenium	ND	QP	2.0	0.50	ug/L	-	02/14/17 18:13	02/15/17 12:51	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L	-	02/14/17 21:33	02/16/17 15:59	1

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		5.88	0.490	ug/L	-	02/09/17 11:35	02/13/17 18:38	1
Bis(2-ethylhexyl) phthalate	ND		4.90	1.96	ug/L	-	02/09/17 11:35	02/13/17 18:38	1
N-Nitrosodimethylamine	ND		4.90	0.980	ug/L	-	02/09/17 11:35	02/13/17 18:38	1
Pentachlorophenol	ND		4.90	0.980	ug/L	-	02/09/17 11:35	02/13/17 18:38	1
2,4-Dinitrotoluene	ND		4.90	1.96	ug/L	-	02/09/17 11:35	02/13/17 18:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	65		40 - 120	02/09/17 11:35	02/13/17 18:38	1
2-Fluorobiphenyl	61		50 - 120	02/09/17 11:35	02/13/17 18:38	1
2-Fluorophenol	57		30 - 120	02/09/17 11:35	02/13/17 18:38	1
Nitrobenzene-d5	62		45 - 120	02/09/17 11:35	02/13/17 18:38	1
Phenol-d6	56		35 - 120	02/09/17 11:35	02/13/17 18:38	1
Terphenyl-d14	81		37 - 144	02/09/17 11:35	02/13/17 18:38	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0051	0.0025	ug/L	-	02/09/17 11:08	02/11/17 13:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	47		10 - 150	02/09/17 11:08	02/11/17 13:02	1
DCB Decachlorobiphenyl (Surr)	70		18 - 134	02/09/17 11:08	02/11/17 13:02	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.3		0.50	0.25	mg/L	-		02/08/17 20:51	1
Nitrate as N	0.93		0.11	0.055	mg/L	-		02/08/17 20:51	1
Nitrite as N	ND		0.15	0.070	mg/L	-		02/08/17 20:51	1
Sulfate	24		0.50	0.25	mg/L	-		02/08/17 20:51	1

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L	-		02/09/17 16:32	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.93		0.15	0.070	mg/L	-		02/21/17 10:17	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,7,8-PeCDD	0.00000041	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,7,8-PeCDF	0.00000027	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
2,3,4,7,8-PeCDF	0.00000037	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,4,7,8-HxCDD	0.00000056	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,6,7,8-HxCDD	0.00000068	J,DX q MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,7,8,9-HxCDD	0.00000065	J,DX q MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,4,7,8-HxCDF	0.00000065	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,6,7,8-HxCDF	0.00000058	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,7,8,9-HxCDF	0.00000036	J,DX q MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
2,3,4,6,7,8-HxCDF	0.00000031	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,4,6,7,8-HpCDD	0.00000088	J,DX MB	0.000050	0.0000003	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,4,6,7,8-HpCDF	0.00000025	J,DX MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
OCDD	0.00000089	J,DX MB	0.00010	0.0000003	ug/L		02/14/17 14:51	02/17/17 08:37	1
OCDF	0.00000042	J,DX MB	0.00010	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total TCDD	ND		0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total TCDF	0.00000070	J,DX MB	0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total PeCDD	0.00000041	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total PeCDF	0.00000064	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total HxCDD	0.00000035	J,DX q MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total HxCDF	0.00000023	J,DX q MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total HpCDD	0.00000018	J,DX MB	0.000050	0.0000003	ug/L		02/14/17 14:51	02/17/17 08:37	1
Total HpCDF	0.00000044	J,DX MB	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 08:37	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac	
13C-2,3,7,8-TCDD	73		25 - 164			02/14/17 14:51	02/17/17 08:37	1	
13C-2,3,7,8-TCDF	67		24 - 169			02/14/17 14:51	02/17/17 08:37	1	
13C-1,2,3,7,8-PeCDD	83		25 - 181			02/14/17 14:51	02/17/17 08:37	1	
13C-1,2,3,7,8-PeCDF	70		24 - 185			02/14/17 14:51	02/17/17 08:37	1	
13C-2,3,4,7,8-PeCDF	75		21 - 178			02/14/17 14:51	02/17/17 08:37	1	
13C-1,2,3,4,7,8-HxCDD	76		32 - 141			02/14/17 14:51	02/17/17 08:37	1	

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-1,2,3,6,7,8-HxCDD	84		28 - 130	02/14/17 14:51	02/17/17 08:37	1
13C-1,2,3,4,7,8-HxCDF	76		26 - 152	02/14/17 14:51	02/17/17 08:37	1
13C-1,2,3,6,7,8-HxCDF	80		26 - 123	02/14/17 14:51	02/17/17 08:37	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147	02/14/17 14:51	02/17/17 08:37	1
13C-2,3,4,6,7,8-HxCDF	85		28 - 136	02/14/17 14:51	02/17/17 08:37	1
13C-1,2,3,4,6,7,8-HpCDD	84		23 - 140	02/14/17 14:51	02/17/17 08:37	1
13C-1,2,3,4,6,7,8-HpCDF	79		28 - 143	02/14/17 14:51	02/17/17 08:37	1
13C-1,2,3,4,7,8,9-HpCDF	89		26 - 138	02/14/17 14:51	02/17/17 08:37	1
13C-OCDD	91		17 - 157	02/14/17 14:51	02/17/17 08:37	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	02/14/17 14:51	02/17/17 08:37	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000020	ug/L		02/14/17 14:51	02/18/17 00:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	67		24 - 169				02/14/17 14:51	02/18/17 00:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197				02/14/17 14:51	02/18/17 00:40	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/18/17 09:59	02/20/17 00:33	1
Copper	2.9		2.0	0.50	ug/L		02/18/17 09:59	02/20/17 00:33	1
Lead	ND		1.0	0.50	ug/L		02/18/17 09:59	02/20/17 00:33	1
Selenium	ND		2.0	0.50	ug/L		02/18/17 09:59	02/20/17 00:33	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 17:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	8.5		0.10	0.040	NTU			02/09/17 16:16	1
Total Dissolved Solids	120		10	5.0	mg/L			02/14/17 10:01	1
Total Suspended Solids	5.1		1.0	0.50	mg/L			02/15/17 16:43	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:51	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/16/17 17:12	1
Methylene Blue Active Substances	0.23		0.10	0.050	mg/L			02/10/17 01:11	1
Biochemical Oxygen Demand	1.8	J,DX	2.0	0.50	mg/L			02/10/17 07:50	1

TestAmerica Irvine

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV
Chronic-Selenestr um	Bioassay	NONE	ABC

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Client Sample ID: Outfall018_20170208_Comp_F

Lab Sample ID: 440-175978-1

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388279	02/14/17 18:13	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388477	02/15/17 12:51	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388279	02/14/17 18:13	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388664	02/15/17 12:51	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	388307	02/14/17 21:33	DB	TAL IRV
Dissolved	Analysis	245.1		1			388790	02/16/17 15:59	DB	TAL IRV

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			1020 mL	2.0 mL	387389	02/09/17 11:35	JC1	TAL IRV
Total/NA	Analysis	625		1			388032	02/13/17 18:38	DF	TAL IRV
Total/NA	Prep	608			990 mL	2 mL	387433	02/09/17 11:08	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			387787	02/11/17 13:02	JM	TAL IRV
Total/NA	Analysis	300.0		1			387177	02/08/17 20:51	NTN	TAL IRV
Total/NA	Analysis	300.0		1			387178	02/08/17 20:51	NTN	TAL IRV
Total/NA	Analysis	314.0		1			387392	02/09/17 16:32	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			389516	02/21/17 10:17	TLN	TAL IRV
Total/NA	Prep	1613B			1002.7 mL	20 uL	150514	02/14/17 14:51	DXD	TAL SAC
Total/NA	Analysis	1613B		1			151022	02/17/17 08:37	ALM	TAL SAC
Total/NA	Prep	1613B	RA		1002.7 mL	20 uL	150514	02/14/17 14:51	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			151375	02/18/17 00:40	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	389069	02/18/17 09:59	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1			389235	02/20/17 00:33	EN	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388098	02/13/17 22:08	DB	TAL IRV
Total/NA	Analysis	245.1		1			388283	02/14/17 17:24	DB	TAL IRV
Total/NA	Analysis	180.1		1			387491	02/09/17 16:16	RB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	388181	02/14/17 10:01	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	388517	02/15/17 16:43	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387906	02/13/17 14:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388090	02/13/17 20:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	388781	02/16/17 17:12	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	387570	02/10/17 01:11	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			387610	02/10/17 07:50	MMP	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Laboratory References:

ABC = Aquatic Bioassay - Ventura, CA, 29 North Olive Street, Ventura, CA 93001

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387389/1-A
Matrix: Water
Analysis Batch: 388032

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387389

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/09/17 09:24	02/13/17 14:14	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/09/17 09:24	02/13/17 14:14	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/09/17 09:24	02/13/17 14:14	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/09/17 09:24	02/13/17 14:14	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/09/17 09:24	02/13/17 14:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	78		40 - 120	02/09/17 09:24	02/13/17 14:14	1
2-Fluorobiphenyl	77		50 - 120	02/09/17 09:24	02/13/17 14:14	1
2-Fluorophenol	74		30 - 120	02/09/17 09:24	02/13/17 14:14	1
Nitrobenzene-d5	74		45 - 120	02/09/17 09:24	02/13/17 14:14	1
Phenol-d6	69		35 - 120	02/09/17 09:24	02/13/17 14:14	1
Terphenyl-d14	101		37 - 144	02/09/17 09:24	02/13/17 14:14	1

Lab Sample ID: LCS 440-387389/2-A
Matrix: Water
Analysis Batch: 388032

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387389

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	7.392		ug/L		74	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	9.173		ug/L		92	10 - 150
N-Nitrosodimethylamine	10.0	7.322		ug/L		73	26 - 117
Pentachlorophenol	20.0	15.26		ug/L		76	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	77		40 - 120
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	58		30 - 120
Nitrobenzene-d5	74		45 - 120
Phenol-d6	57		35 - 120
Terphenyl-d14	88		37 - 144

Lab Sample ID: LCSD 440-387389/3-A
Matrix: Water
Analysis Batch: 388032

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387389

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,4,6-Trichlorophenol	10.0	7.872		ug/L		79	37 - 144	6	35
Bis(2-ethylhexyl) phthalate	10.0	8.713		ug/L		87	10 - 150	5	35
N-Nitrosodimethylamine	10.0	7.695		ug/L		77	26 - 117	5	35
Pentachlorophenol	20.0	16.69		ug/L		83	14 - 150	9	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	83		40 - 120
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	68		30 - 120
Nitrobenzene-d5	72		45 - 120

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-387389/3-A
Matrix: Water
Analysis Batch: 388032

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387389

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Phenol-d6	74		35 - 120
Terphenyl-d14	84		37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-387433/1-A
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0050	0.0025	ug/L		02/09/17 11:08	02/11/17 12:04	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	44		10 - 150	02/09/17 11:08	02/11/17 12:04	1
DCB Decachlorobiphenyl (Surr)	61		18 - 134	02/09/17 11:08	02/11/17 12:04	1

Lab Sample ID: LCS 440-387433/2-A
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
alpha-BHC	0.200	0.0927		ug/L		46	37 - 134

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	44		10 - 150
DCB Decachlorobiphenyl (Surr)	58		18 - 134

Lab Sample ID: 440-175633-H-1-B MS
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
alpha-BHC	ND		0.190	0.0913		ug/L		48	40 - 120

Surrogate	MS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	39		10 - 150
DCB Decachlorobiphenyl (Surr)	65		18 - 134

Lab Sample ID: 440-175633-J-1-A MSD
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
alpha-BHC	ND		0.190	0.0777		ug/L		41	40 - 120	16	30

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-175633-J-1-A MSD
Matrix: Water
Analysis Batch: 387787

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387433

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tetrachloro-m-xylene	28		10 - 150
DCB Decachlorobiphenyl (Surr)	71		18 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-387177/4
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/08/17 11:06	1
Nitrite as N	ND		0.15	0.070	mg/L			02/08/17 11:06	1

Lab Sample ID: LCS 440-387177/2
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.16		mg/L		102	90 - 110
Nitrite as N	1.52	1.56		mg/L		103	90 - 110

Lab Sample ID: 440-175924-B-13 MS
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	ND		22.6	21.6		mg/L		96	80 - 120
Nitrite as N	ND		30.4	29.7		mg/L		98	80 - 120

Lab Sample ID: 440-175924-B-13 MSD
Matrix: Water
Analysis Batch: 387177

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	ND		22.6	22.1		mg/L		98	80 - 120	2	20
Nitrite as N	ND		30.4	30.1		mg/L		99	80 - 120	1	20

Lab Sample ID: MB 440-387178/4
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/08/17 11:06	1
Sulfate	ND		0.50	0.25	mg/L			02/08/17 11:06	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-387178/2
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.88		mg/L		98	90 - 110
Sulfate	5.00	5.30		mg/L		106	90 - 110

Lab Sample ID: 440-175924-B-13 MS
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	16		100	105		mg/L		89	80 - 120
Sulfate	81		100	180		mg/L		99	80 - 120

Lab Sample ID: 440-175924-B-13 MSD
Matrix: Water
Analysis Batch: 387178

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	16		100	105		mg/L		89	80 - 120	0	20
Sulfate	81		100	179		mg/L		98	80 - 120	1	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-387392/3
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/09/17 10:01	1

Lab Sample ID: LCS 440-387392/2
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	26.8		ug/L		107	85 - 115

Lab Sample ID: MRL 440-387392/5
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	4.55		ug/L		114	75 - 125

Lab Sample ID: 440-176078-B-1 MS
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	47		25.0	89.4	LM	ug/L		170	80 - 120

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: 440-176078-B-1 MSD
Matrix: Water
Analysis Batch: 387392

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	47		25.0	88.8	LM	ug/L		168	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,6,7,8-HxCDD	0.000000285	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8,9-HxCDD	0.000000400	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,7,8,9-HxCDF	0.000000495	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,6,7,8-HpCDD	0.000000758	J,DX	0.000050	0.0000002	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,6,7,8-HpCDF	0.000000567	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
1,2,3,4,7,8,9-HpCDF	0.000000304	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
OCDD	0.00000307	J,DX q	0.00010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
OCDF	0.00000102	J,DX	0.00010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total TCDD	ND		0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total TCDF	0.00000155	J,DX q	0.000010	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total PeCDD	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total PeCDF	ND		0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total HxCDD	0.000000685	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total HxCDF	0.000000495	J,DX	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total HpCDD	0.00000201	J,DX	0.000050	0.0000002	ug/L		02/14/17 14:51	02/17/17 05:32	1
Total HpCDF	0.000000871	J,DX q	0.000050	0.0000001	ug/L		02/14/17 14:51	02/17/17 05:32	1
				2					
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	66		25 - 164				02/14/17 14:51	02/17/17 05:32	1
13C-2,3,7,8-TCDF	65		24 - 169				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8-PeCDD	75		25 - 181				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8-PeCDF	67		24 - 185				02/14/17 14:51	02/17/17 05:32	1
13C-2,3,4,7,8-PeCDF	76		21 - 178				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8-HxCDD	78		32 - 141				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,6,7,8-HxCDD	82		28 - 130				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,7,8,9-HxCDF	66		29 - 147				02/14/17 14:51	02/17/17 05:32	1
13C-2,3,4,6,7,8-HxCDF	78		28 - 136				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,6,7,8-HpCDD	73		23 - 140				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,6,7,8-HpCDF	75		28 - 143				02/14/17 14:51	02/17/17 05:32	1
13C-1,2,3,4,7,8,9-HpCDF	74		26 - 138				02/14/17 14:51	02/17/17 05:32	1
13C-OCDD	75		17 - 157				02/14/17 14:51	02/17/17 05:32	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	93		35 - 197				02/14/17 14:51	02/17/17 05:32	1

Lab Sample ID: LCS 320-150514/2-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000186		ug/L		93	67 - 158
2,3,7,8-TCDF	0.000200	0.000198	MB	ug/L		99	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000974		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000969		ug/L		97	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000965		ug/L		96	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000938		ug/L		94	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000980	MB	ug/L		98	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000863	MB	ug/L		86	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000909		ug/L		91	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000973		ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000958	MB	ug/L		96	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000979		ug/L		98	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000923	MB	ug/L		92	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000953	MB	ug/L		95	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000895	MB	ug/L		89	78 - 138
OCDD	0.00200	0.00187	MB	ug/L		93	78 - 144
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

<i>Isotope Dilution</i>	LCS LCS		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	72		20 - 175
13C-2,3,7,8-TCDF	70		22 - 152
13C-1,2,3,7,8-PeCDD	83		21 - 227
13C-1,2,3,7,8-PeCDF	74		21 - 192
13C-2,3,4,7,8-PeCDF	82		13 - 328
13C-1,2,3,4,7,8-HxCDD	81		21 - 193
13C-1,2,3,6,7,8-HxCDD	84		25 - 163
13C-1,2,3,4,7,8-HxCDF	80		19 - 202
13C-1,2,3,6,7,8-HxCDF	80		21 - 159
13C-1,2,3,7,8,9-HxCDF	71		17 - 205
13C-2,3,4,6,7,8-HxCDF	81		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	80		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	80		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	81		20 - 186
13C-OCDD	84		13 - 199

<i>Surrogate</i>	LCS LCS		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	94		31 - 191

Lab Sample ID: LCSD 320-150514/3-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150514

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158	8	50
2,3,7,8-TCDF	0.000200	0.000208	MB	ug/L		104	75 - 158	5	50
1,2,3,7,8-PeCDD	0.00100	0.000969		ug/L		97	70 - 142	1	50
1,2,3,7,8-PeCDF	0.00100	0.000983		ug/L		98	80 - 134	1	50
2,3,4,7,8-PeCDF	0.00100	0.000986		ug/L		99	68 - 160	2	50
1,2,3,4,7,8-HxCDD	0.00100	0.000939		ug/L		94	70 - 164	0	50
1,2,3,6,7,8-HxCDD	0.00100	0.000976	MB	ug/L		98	76 - 134	0	50
1,2,3,7,8,9-HxCDD	0.00100	0.000848	MB	ug/L		85	64 - 162	2	50
1,2,3,4,7,8-HxCDF	0.00100	0.000923		ug/L		92	72 - 134	2	50
1,2,3,6,7,8-HxCDF	0.00100	0.000964		ug/L		96	84 - 130	1	50
1,2,3,7,8,9-HxCDF	0.00100	0.000954	MB	ug/L		95	78 - 130	0	50
2,3,4,6,7,8-HxCDF	0.00100	0.000994		ug/L		99	70 - 156	2	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000921	MB	ug/L		92	70 - 140	0	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000953	MB	ug/L		95	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000899	MB	ug/L		90	78 - 138	0	50
OCDD	0.00200	0.00185	MB	ug/L		93	78 - 144	1	50
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170	0	50

<i>Isotope Dilution</i>	LCSD LCSD		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-2,3,7,8-TCDD	63		20 - 175
13C-2,3,7,8-TCDF	62		22 - 152
13C-1,2,3,7,8-PeCDD	76		21 - 227
13C-1,2,3,7,8-PeCDF	67		21 - 192
13C-2,3,4,7,8-PeCDF	76		13 - 328
13C-1,2,3,4,7,8-HxCDD	78		21 - 193
13C-1,2,3,6,7,8-HxCDD	84		25 - 163
13C-1,2,3,4,7,8-HxCDF	77		19 - 202
13C-1,2,3,6,7,8-HxCDF	79		21 - 159
13C-1,2,3,7,8,9-HxCDF	67		17 - 205
13C-2,3,4,6,7,8-HxCDF	78		22 - 176

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-150514/3-A
Matrix: Water
Analysis Batch: 151022

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150514

<i>Isotope Dilution</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C-1,2,3,4,6,7,8-HpCDD	75		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	77		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	76		20 - 186
13C-OCDD	78		13 - 199

<i>Surrogate</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
37Cl4-2,3,7,8-TCDD	83		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-150514/1-A
Matrix: Water
Analysis Batch: 151375

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150514

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>EDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
2,3,7,8-TCDF - RA	ND		0.000010	0.0000020	ug/L		02/14/17 14:51	02/17/17 23:24	1

<i>Isotope Dilution</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
13C-2,3,7,8-TCDF - RA	61		24 - 169	02/14/17 14:51	02/17/17 23:24	1

<i>Surrogate</i>	<i>MB MB</i>		<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>%Recovery</i>	<i>Qualifier</i>				
37Cl4-2,3,7,8-TCDD - RA	88		35 - 197	02/14/17 14:51	02/17/17 23:24	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389069/1-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389069

<i>Analyte</i>	<i>MB Result</i>	<i>MB Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Cadmium	ND		1.0	0.25	ug/L		02/18/17 09:59	02/19/17 23:50	1
Copper	ND		2.0	0.50	ug/L		02/18/17 09:59	02/19/17 23:50	1
Lead	ND		1.0	0.50	ug/L		02/18/17 09:59	02/19/17 23:50	1
Selenium	ND		2.0	0.50	ug/L		02/18/17 09:59	02/19/17 23:50	1

Lab Sample ID: LCS 440-389069/2-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389069

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS LCS</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>Limits</i>
		<i>Result</i>	<i>Qualifier</i>				
Cadmium	80.0	78.3		ug/L		98	85 - 115
Copper	80.0	80.3		ug/L		100	85 - 115
Lead	80.0	77.5		ug/L		97	85 - 115
Selenium	80.0	77.7		ug/L		97	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175978-3 MS
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Outfall018_20170208_Comp
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
Cadmium	ND		80.0	79.0		ug/L		99		70 - 130
Copper	2.9		80.0	83.0		ug/L		100		70 - 130
Lead	ND		80.0	77.7		ug/L		97		70 - 130
Selenium	ND		80.0	76.9		ug/L		96		70 - 130

Lab Sample ID: 440-175978-3 MSD
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Outfall018_20170208_Comp
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier							
Cadmium	ND		80.0	85.3		ug/L		107		70 - 130	8	20
Copper	2.9		80.0	90.0		ug/L		109		70 - 130	8	20
Lead	ND		80.0	82.7		ug/L		103		70 - 130	6	20
Selenium	ND		80.0	83.4		ug/L		104		70 - 130	8	20

Lab Sample ID: MB 440-388058/1-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388279

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Cadmium	ND		1.0	0.25	ug/L		02/14/17 18:13	02/15/17 12:21	1
Copper	ND		2.0	0.50	ug/L		02/14/17 18:13	02/15/17 12:21	1
Lead	ND		1.0	0.50	ug/L		02/14/17 18:13	02/15/17 12:21	1
Selenium	ND		2.0	0.50	ug/L		02/14/17 18:13	02/15/17 12:21	1

Lab Sample ID: LCS 440-388058/2-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike	LCS	LCS	Unit	D	%Rec	%Rec.	Limits
Cadmium	80.0	74.6		ug/L		93		85 - 115
Copper	80.0	75.1		ug/L		94		85 - 115
Lead	80.0	73.1		ug/L		91		85 - 115
Selenium	80.0	72.8		ug/L		91		85 - 115

Lab Sample ID: LCSD 440-388058/23-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike	LCSD	LCSD	Unit	D	%Rec	%Rec.	Limits	RPD	Limit
Cadmium	80.0	73.5		ug/L		92		85 - 115	2	20
Copper	80.0	74.2		ug/L		93		85 - 115	1	20
Lead	80.0	73.8		ug/L		92		85 - 115	1	20
Selenium	80.0	72.7		ug/L		91		85 - 115	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-175637-C-2-C MS

Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike

Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Cadmium	ND	QP	80.0	73.8		ug/L		92	70 - 130
Copper	1.8	J,DX QP	80.0	74.3		ug/L		91	70 - 130
Lead	ND	QP	80.0	72.4		ug/L		91	70 - 130
Selenium	ND	QP	80.0	72.9		ug/L		91	70 - 130

Lab Sample ID: 440-175637-C-2-D MSD

Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike Duplicate

Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Cadmium	ND	QP	80.0	70.0		ug/L		87	70 - 130	5	20
Copper	1.8	J,DX QP	80.0	71.4		ug/L		87	70 - 130	4	20
Lead	ND	QP	80.0	67.3		ug/L		84	70 - 130	7	20
Selenium	ND	QP	80.0	70.2		ug/L		88	70 - 130	4	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388098/1-A

Matrix: Water
Analysis Batch: 388283

Client Sample ID: Method Blank

Prep Type: Total/NA
Prep Batch: 388098

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 16:36	1

Lab Sample ID: LCS 440-388098/2-A

Matrix: Water
Analysis Batch: 388283

Client Sample ID: Lab Control Sample

Prep Type: Total/NA
Prep Batch: 388098

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Mercury	8.00	7.73		ug/L		97	85 - 115

Lab Sample ID: 440-176655-A-1-B MS

Matrix: Water
Analysis Batch: 388283

Client Sample ID: Matrix Spike

Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample		Spike Added	MS MS		Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Mercury	ND		8.00	7.79		ug/L		97	70 - 130

Lab Sample ID: 440-176655-A-1-C MSD

Matrix: Water
Analysis Batch: 388283

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA
Prep Batch: 388098

Analyte	Sample		Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Mercury	ND		8.00	7.73		ug/L		97	70 - 130	1	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: MB 440-388058/1-C
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388307

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/14/17 21:33	02/16/17 15:35	1

Lab Sample ID: LCS 440-388058/2-C
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388307

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.31		ug/L		104	85 - 115

Lab Sample ID: 440-175985-B-1-D MS
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 388307

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.19		ug/L		102	70 - 130

Lab Sample ID: 440-175985-B-1-E MSD
Matrix: Water
Analysis Batch: 388790

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 388307

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		8.00	8.14		ug/L		102	70 - 130	1	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-387491/5
Matrix: Water
Analysis Batch: 387491

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/09/17 16:16	1

Lab Sample ID: 440-176071-A-2 DU
Matrix: Water
Analysis Batch: 387491

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	1.8		1.69		NTU		4	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-388181/1
Matrix: Water
Analysis Batch: 388181

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/14/17 10:01	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 440-388181/2
Matrix: Water
Analysis Batch: 388181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	946		mg/L		95	90 - 110

Lab Sample ID: 440-175978-3 DU
Matrix: Water
Analysis Batch: 388181

Client Sample ID: Outfall018_20170208_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	120		116		mg/L		0.9	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-388517/1
Matrix: Water
Analysis Batch: 388517

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/15/17 16:43	1

Lab Sample ID: LCS 440-388517/2
Matrix: Water
Analysis Batch: 388517

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	1030		mg/L		103	85 - 115

Lab Sample ID: 440-176453-B-1 DU
Matrix: Water
Analysis Batch: 388517

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	1100		1070		mg/L		2	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387906/1-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387906

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:50	1

Lab Sample ID: LCS 440-387906/2-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.9		ug/L		97	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCSD 440-387906/3-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	96.8		ug/L		97	90 - 110	0	10

Lab Sample ID: 440-176655-K-1-B MSD
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.7		ug/L		100	70 - 115	2	15

Lab Sample ID: 440-176655-K-1-C MS
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	97.9		ug/L		98	70 - 115

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-388781/10
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/16/17 16:30	1

Lab Sample ID: LCS 440-388781/11
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	4.820		mg/L		96	90 - 110

Lab Sample ID: MRL 440-388781/9
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2280		mg/L		114	10 - 200

Lab Sample ID: 440-176929-C-3 MS
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.070		mg/L		101	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-176929-C-3 MSD
Matrix: Water
Analysis Batch: 388781

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	4.720		mg/L		94	90 - 110	7	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-387570/3
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/10/17 01:11	1

Lab Sample ID: LCS 440-387570/4
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.243		mg/L		97	90 - 110

Lab Sample ID: 440-175968-A-2 MS
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.18		0.250	0.329		mg/L		58	50 - 125

Lab Sample ID: 440-175968-A-2 MSD
Matrix: Water
Analysis Batch: 387570

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.18		0.250	0.345		mg/L		65	50 - 125	5	20

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-387610/1
Matrix: Water
Analysis Batch: 387610

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/10/17 07:50	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: SM5210B - BOD, 5 Day (Continued)

Lab Sample ID: LCS 440-387610/4
 Matrix: Water
 Analysis Batch: 387610

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	192		mg/L		97	85 - 115

Lab Sample ID: LCSD 440-387610/5
 Matrix: Water
 Analysis Batch: 387610

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	209		mg/L		105	85 - 115	8	20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

GC/MS Semi VOA

Prep Batch: 387389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	625	
MB 440-387389/1-A	Method Blank	Total/NA	Water	625	
LCS 440-387389/2-A	Lab Control Sample	Total/NA	Water	625	
LCS 440-387389/3-A	Lab Control Sample Dup	Total/NA	Water	625	

Analysis Batch: 388032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	625	387389
MB 440-387389/1-A	Method Blank	Total/NA	Water	625	387389
LCS 440-387389/2-A	Lab Control Sample	Total/NA	Water	625	387389
LCS 440-387389/3-A	Lab Control Sample Dup	Total/NA	Water	625	387389

GC Semi VOA

Prep Batch: 387433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	608	
MB 440-387433/1-A	Method Blank	Total/NA	Water	608	
LCS 440-387433/2-A	Lab Control Sample	Total/NA	Water	608	
440-175633-H-1-B MS	Matrix Spike	Total/NA	Water	608	
440-175633-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	

Analysis Batch: 387787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	608 Pesticides	387433
MB 440-387433/1-A	Method Blank	Total/NA	Water	608 Pesticides	387433
LCS 440-387433/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	387433
440-175633-H-1-B MS	Matrix Spike	Total/NA	Water	608 Pesticides	387433
440-175633-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	387433

HPLC/IC

Analysis Batch: 387177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	300.0	
MB 440-387177/4	Method Blank	Total/NA	Water	300.0	
LCS 440-387177/2	Lab Control Sample	Total/NA	Water	300.0	
440-175924-B-13 MS	Matrix Spike	Total/NA	Water	300.0	
440-175924-B-13 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 387178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	300.0	
MB 440-387178/4	Method Blank	Total/NA	Water	300.0	
LCS 440-387178/2	Lab Control Sample	Total/NA	Water	300.0	
440-175924-B-13 MS	Matrix Spike	Total/NA	Water	300.0	
440-175924-B-13 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

HPLC/IC (Continued)

Analysis Batch: 387392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	314.0	
MB 440-387392/3	Method Blank	Total/NA	Water	314.0	
LCS 440-387392/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-387392/5	Lab Control Sample	Total/NA	Water	314.0	
440-176078-B-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-176078-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 389516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 150514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	1613B	
440-175978-3 - RA	Outfall018_20170208_Comp	Total/NA	Water	1613B	
MB 320-150514/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-150514/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-150514/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-150514/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 151022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	1613B	150514
MB 320-150514/1-A	Method Blank	Total/NA	Water	1613B	150514
LCS 320-150514/2-A	Lab Control Sample	Total/NA	Water	1613B	150514
LCSD 320-150514/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	150514

Analysis Batch: 151375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3 - RA	Outfall018_20170208_Comp	Total/NA	Water	1613B	150514
MB 320-150514/1-A - RA	Method Blank	Total/NA	Water	1613B	150514

Metals

Filtration Batch: 388058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388058/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-388058/1-C	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-388058/2-C	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	
440-175985-B-1-D MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-175985-B-1-E MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Metals (Continued)

Prep Batch: 388098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	245.1	
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Prep Batch: 388279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	200.2	388058
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.2	388058
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.2	388058
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.2	388058
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.2	388058
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	388058

Analysis Batch: 388283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	245.1	388098
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	388098
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	388098
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	388098
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	388098

Prep Batch: 388307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	245.1	388058
MB 440-388058/1-C	Method Blank	Dissolved	Water	245.1	388058
LCS 440-388058/2-C	Lab Control Sample	Dissolved	Water	245.1	388058
440-175985-B-1-D MS	Matrix Spike	Dissolved	Water	245.1	388058
440-175985-B-1-E MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	388058

Analysis Batch: 388477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	200.8	388279
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.8	388279
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.8	388279
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.8	388279
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.8	388279
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	388279

Analysis Batch: 388664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	200.8	388279
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.8	388279
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.8	388279
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.8	388279
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.8	388279
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	388279

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Metals (Continued)

Analysis Batch: 388790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	245.1	388307
MB 440-388058/1-C	Method Blank	Dissolved	Water	245.1	388307
LCS 440-388058/2-C	Lab Control Sample	Dissolved	Water	245.1	388307
440-175985-B-1-D MS	Matrix Spike	Dissolved	Water	245.1	388307
440-175985-B-1-E MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	388307

Prep Batch: 389069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total Recoverable	Water	200.2	
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175978-3 MS	Outfall018_20170208_Comp	Total Recoverable	Water	200.2	
440-175978-3 MSD	Outfall018_20170208_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 389235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total Recoverable	Water	200.8	389069
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.8	389069
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389069
440-175978-3 MS	Outfall018_20170208_Comp	Total Recoverable	Water	200.8	389069
440-175978-3 MSD	Outfall018_20170208_Comp	Total Recoverable	Water	200.8	389069

General Chemistry

Analysis Batch: 387491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	180.1	
MB 440-387491/5	Method Blank	Total/NA	Water	180.1	
440-176071-A-2 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 387570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	SM 5540C	
MB 440-387570/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-387570/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-175968-A-2 MS	Matrix Spike	Total/NA	Water	SM 5540C	
440-175968-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 387610

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	SM5210B	
USB 440-387610/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-387610/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-387610/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Prep Batch: 387906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	Distill/CN	
MB 440-387906/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

General Chemistry (Continued)

Prep Batch: 387906 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS D 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	Distill/CN	

Analysis Batch: 388090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	SM 4500 CN E	387906
MB 440-387906/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387906
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387906
LCS D 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	387906

Analysis Batch: 388181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	SM 2540C	
MB 440-388181/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-388181/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-175978-3 DU	Outfall018_20170208_Comp	Total/NA	Water	SM 2540C	

Analysis Batch: 388517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	SM 2540D	
MB 440-388517/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-388517/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-176453-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 388781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-388781/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-388781/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-388781/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-176929-C-3 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-176929-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



February 28, 2017

Ms. Urvashi Patel
TestAmerica Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Patel:

We are pleased to present the enclosed revised bioassay report. The test was conducted under guidelines prescribed in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013*. Results were as follows:

CLIENT: Haley & Aldrich
SAMPLE ID.: Outfall018_20170208_Comp (440-175978-3)
DATE RECEIVED: 10 Feb - 17
ABC LAB NO.: TAM0217.150

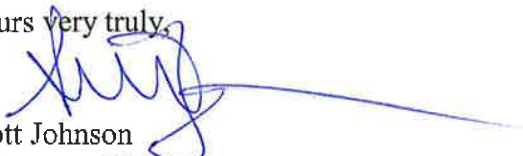
CHRONIC SELENASTRUM ALGAE GROWTH BIOASSAY

IWC = 100.00 %

TST RESULT

GROWTH = PASS % EFFECT = 10.91 %

Yours very truly,


Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 24 Feb-17 11:14 (p 1 of 1)

Test Code: TAM0217.150sel | 11-1014-3005

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-8896-2908 Test Type: Cell Growth Analyst:
 Start Date: 10 Feb-17 12:51 Protocol: EPA/821/R-02-013 (2002) Diluent: Laboratory Water
 Ending Date: 14 Feb-17 11:00 Species: Selenastrum capricornutum Brine: Not Applicable
 Duration: 94h Source: Aquatic Biosystems, CO Age:

Sample ID: 13-0269-2802 Code: TAM0217.150s Client: Test America Irvine
 Sample Date: 08 Feb-17 09:15 Material: Sample Water Project: Boeing NPDES SSFL Outfalls
 Receipt Date: 10 Feb-17 11:52 Source: Bioassay Report
 Sample Age: 52h (2 °C) Station: Outfall018_20170208_Comp (440-175978-

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result
05-4191-3018	Cell Density	TST-Welch's t Test	1.1E-06	100% passed cell density

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
05-4191-3018	Cell Density	Control CV	0.03689	<<	0.2	Yes	Passes Criteria
05-4191-3018	Cell Density	Control Resp	1.38E+6	1000000	>>	Yes	Passes Criteria

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	8	1.378E+6	1.335E+6	1.420E+6	1.307E+6	1.450E+6	1.797E+4	5.082E+4	3.69%	0.00%
100		8	1.227E+6	1.183E+6	1.272E+6	1.157E+6	1.312E+6	1.867E+4	5.281E+4	4.30%	10.91%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.365E+6	1.307E+6	1.437E+6	1.388E+6	1.380E+6	1.314E+6	1.450E+6	1.380E+6
100		1.312E+6	1.235E+6	1.214E+6	1.214E+6	1.157E+6	1.181E+6	1.211E+6	1.295E+6

CETIS Analytical Report

Report Date: 24 Feb-17 11:14 (p 1 of 2)
 Test Code: TAM0217.150sel | 11-1014-3005

Selenastrum Growth Test **Aquatic Bioassay & Consulting Labs, Inc.**

Analysis ID: 05-4191-3018	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 24 Feb-17 11:14	Analysis: Parametric Bioequivalence-Two Sample	Official Results: Yes
Batch ID: 05-8896-2908	Test Type: Cell Growth	Analyst:
Start Date: 10 Feb-17 12:51	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Feb-17 11:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 13-0269-2802	Code: TAM0217.150s	Client: Test America Irvine
Sample Date: 08 Feb-17 09:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 10 Feb-17 11:52	Source: Bioassay Report	
Sample Age: 52h (2 °C)	Station: Outfall018_20170208_Comp (440-175978-	

Data Transform	Ait Hyp	TST_b	Comparison Result
Untransformed	C*b < T	0.75	100% passed cell density

TST-Welch's t Test

Control	vs	Control II	Test Stat	Critical	DF	P-Type	P-Value	Decision(α:25%)
Negative Control		100*	8.432	0.6955	12	CDF	1.1E-06	Non-Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.03689	<<	0.2	Yes	Passes Criteria
Control Resp	1.38E+6	1000000	>>	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	9.030E+10	9.030E+10	1	33.62	4.6E-05	Significant Effect
Error	3.76E+10	2.686E+09	14			
Total	1.279E+11		15			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	0.04215	8.862	0.8403	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.000782	8.862	0.9781	Equal Variances
Variances	Variance Ratio F Test	1.08	8.885	0.9219	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.5561	3.878	0.1548	Normal Distribution
Distribution	D'Agostino Skewness Test	0.4947	2.576	0.6208	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1679	0.2471	0.2707	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.9225	0.8408	0.1853	Normal Distribution

Cell Density Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	8	1.378E+6	1.335E+6	1.420E+6	1.380E+6	1.307E+6	1.450E+6	1.797E+4	3.69%	0.00%
100		8	1.227E+6	1.183E+6	1.272E+6	1.214E+6	1.157E+6	1.312E+6	1.867E+4	4.30%	10.91%

Cell Density Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
0	N	1.365E+6	1.307E+6	1.437E+6	1.388E+6	1.380E+6	1.314E+6	1.450E+6	1.380E+6
100		1.312E+6	1.235E+6	1.214E+6	1.214E+6	1.157E+6	1.181E+6	1.211E+6	1.295E+6

CETIS Measurement Report

Report Date: 24 Feb-17 11:14 (p 1 of 2)
 Test Code: TAM0217.150sel | 11-1014-3005

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 05-8896-2908	Test Type: Cell Growth	Analyst:
Start Date: 10 Feb-17 12:51	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 14 Feb-17 11:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 94h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 13-0269-2802	Code: TAM0217.150s	Client: Test America Irvine
Sample Date: 08 Feb-17 09:15	Material: Sample Water	Project: Boeing NPDES SSFL Outfalls
Receipt Date: 10 Feb-17 11:52	Source: Bioassay Report	
Sample Age: 52h (2 °C)	Station: Outfall018_20170208_Comp (440-175978-	

Alkalinity (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	68			68	68	0	0	0.0%	0
100		1	51			51	51	0	0	0.0%	0
Overall		2	59.5	-48.5	167.5	51	68	8.5	12.02	20.20%	0 (0%)

Conductivity-µmhos

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	461.6	446.4	476.8	445	475	5.464	12.22	2.65%	0
100		5	258.4	253.9	262.9	255	264	1.631	3.647	1.41%	0
Overall		10	360	283.1	436.9	255	475	33.97	107.4	29.84%	0 (0%)

Hardness (CaCO3)-mg/L

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	1	99			99	99	0	0	0.0%	0
100		1	79			79	79	0	0	0.0%	0
Overall		2	89	-38.06	216.1	79	99	10	14.14	15.89%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	7.72	7.466	7.974	7.4	7.9	0.09165	0.2049	2.66%	0
100		5	7.72	7.481	7.959	7.5	8	0.08602	0.1924	2.49%	0
Overall		10	7.72	7.586	7.854	7.4	8	0.05925	0.1874	2.43%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	5	24.04	23.97	24.11	24	24.1	0.02445	0.05468	0.23%	0
100		5	24.04	23.97	24.11	24	24.1	0.02445	0.05468	0.23%	0
Overall		10	24.04	24	24.08	24	24.1	0.01633	0.05164	0.21%	0 (0%)

TAM.150

Chain of Custody Record



TestAmerica

TestAmerica Irvine
 17461 Derian Ave Suite 100
 Irvine, CA 92614-5817
 Phone (949) 261-1022 Fax (949) 260-3297

THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact:	Phone:	Patel: Urvashi	Urvashi.patel@testamericainc.com	California	440-107340.1
Shipping/Receiving:	Company:	Accreditations Required (See note):		Page:	Page 1 of 1
Address:	29 North Olive Street	Due Date Requested:	2/21/2017	Analysis Requested	440-175978-1
City:	Ventura	TAT Requested (days):		Preservation Codes:	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDTA M - Hexane N - None O - AsH2O2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
State/Zip:	CA, 93001	Project #:	44009879	Other:	
Phone:		SSON#:		Special Instructions/Note:	
Email:		Project Name:	Boeing NPDES SSFL outfalls		
		Sample Identification - Client ID (Lab ID)	Outfall018_20170208_Comp (440-175978-3)		
		Sample Date	2/8/17	Sample Time	09:15 Pacific
		Sample Type (C=Comp, G=grab)		Preservation Code:	Water
		Matrix (Water, Solid, Overseal, BT-TRISK, A-ART)		Field Filtered Sample (Yes or No)	
		Perform MS/MSD (Yes or No)		SUB (Chronic-Selenestrum)/ Chronic-Selenestrum	
		Total Number of containers		6	
		Temp. deg. C		2.0°C	
		Chlorine (mg/L)		0	
		Mn (mg/L)		0	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification

Uncorroborated

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: *SV Bank* Date/Time: *2/9/17 12:00* Company: *TAT* Received by: *Felix* Date/Time: *2/9/17 12:00* Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____ Received by: *omita* Date/Time: *2/10/17/11:52* Company: _____

Custody Seals Intact: Yes No Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: _____

CHRONIC SELENASTRUM GROWTH BIOASSAY

DATE: 5 January - 2017

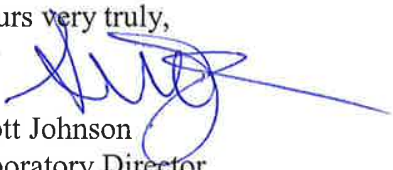
STANDARD TOXICANT: Cadmium Chloride

NOEC = 20.00 ug/l

IC25 = 127.50 ug/l

IC50 = 169.50 ug/l

Yours very truly,



Scott Johnson
Laboratory Director

CETIS Summary Report

Report Date: 19 Jan-17 16:22 (p 1 of 1)

Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID: 02-0919-5357 Test Type: Cell Growth Analyst:
 Start Date: 05 Jan-17 12:32 Protocol: EPA/821/R-02-013 (2002) Diluent: Laboratory Water
 Ending Date: 09 Jan-17 12:00 Species: Selenastrum capricornutum Brine: Not Applicable
 Duration: 95h Source: Aquatic Biosystems, CO Age:

Sample ID: 05-3109-8838 Code: SEL010517 Client: Internal Lab
 Sample Date: 05 Jan-17 12:32 Material: Cadmium chloride Project:
 Receipt Date: Source: Reference Toxicant
 Sample Age: n/a Station: REF TOX

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD ✓
12-5258-0943	Cell Density	Dunnelt Multiple Comparison Test	20	40	28.28		5.99%

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	µg/L	95% LCL	95% UCL	TU	✓
14-2916-7122	Cell Density	Linear Interpolation (ICPIN)	IC5	34.35	13.62	61.11		
			IC10	69.42	18.65	99.03		
			IC15	93.35	62.81	109.5		
			IC20	110.4	88.48	124.6		
			IC25	127.5	108.9	141.2		
			IC40	155.7	149.9	160.7		
			IC50	169.5	164.4	175.1		

Test Acceptability

Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits		Overlap	Decision
				Lower	Upper		
12-5258-0943	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
14-2916-7122	Cell Density	Control CV	0.04997	<<	0.2	Yes	Passes Criteria
12-5258-0943	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
14-2916-7122	Cell Density	Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
12-5258-0943	Cell Density	PMSD	0.05988	0.091	0.29	Yes	Below Criteria

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.244E+6	1.394E+6	3.347E+4	6.694E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.272E+6	1.385E+6	2.670E+4	5.339E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.214E+6	1.293E+6	1.755E+4	3.509E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.121E+6	1.235E+6	2.743E+4	5.485E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.230E+5	9.770E+5	1.289E+4	2.578E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.390E+5	6.150E+5	1.647E+4	3.294E+4	5.80%	57.58%

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

CETIS Analytical Report

Report Date: 19 Jan-17 16:22 (p 1 of 2)
 Test Code: SEL010517 | 10-2386-0047

Selenastrum Growth Test Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 12-5258-0943	Endpoint: Cell Density	CETIS Version: CETISv1.9.2
Analyzed: 19 Jan-17 16:21	Analysis: Parametric-Control vs Treatments	Official Results: Yes
Batch ID: 02-0919-5357	Test Type: Cell Growth	Analyst:
Start Date: 05 Jan-17 12:32	Protocol: EPA/821/R-02-013 (2002)	Diluent: Laboratory Water
Ending Date: 09 Jan-17 12:00	Species: Selenastrum capricornutum	Brine: Not Applicable
Duration: 95h	Source: Aquatic Biosystems, CO	Age:
Sample ID: 05-3109-8838	Code: SEL010517	Client: Internal Lab
Sample Date: 05 Jan-17 12:32	Material: Cadmium chloride	Project:
Receipt Date:	Source: Reference Toxicant	
Sample Age: n/a	Station: REF TOX	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	20	40	28.28		5.99%

Dunnett Multiple Comparison Test

Control	vs	Conc-µg/L	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Negative Control		20	-0.03752	2.407	80200	6	CDF	0.8441	Non-Significant Effect
		40*	2.784	2.407	80200	6	CDF	0.0239	Significant Effect
		80*	4.442	2.407	80200	6	CDF	7.2E-04	Significant Effect
		140*	11.51	2.407	80200	6	CDF	2.7E-05	Significant Effect
		180*	23.15	2.407	80200	6	CDF	2.7E-05	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control CV	0.04997	<<	0.2	Yes	Passes Criteria
Control Resp	1.34E+6	1000000	>>	Yes	Passes Criteria
PMSD	0.05988	0.091	0.29	Yes	Below Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.794E+12	3.587E+11	5	161.6	<1.0E-37	Significant Effect
Error	3.997E+10	2.220E+09	18			
Total	1.834E+12		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	3.334	15.09	0.6486	Equal Variances
Variances	Levene Equality of Variance Test	1.064	4.248	0.4124	Equal Variances
Variances	Mod Levene Equality of Variance Test	0.6834	4.248	0.6420	Equal Variances
Distribution	Anderson-Darling A2 Normality Test	0.6211	3.878	0.1067	Normal Distribution
Distribution	D'Agostino Kurtosis Test	0.1558	2.576	0.8762	Normal Distribution
Distribution	D'Agostino Skewness Test	1.307	2.576	0.1912	Normal Distribution
Distribution	D'Agostino-Pearson K2 Omnibus Test	1.733	9.21	0.4204	Normal Distribution
Distribution	Kolmogorov-Smirnov D Test	0.1427	0.2056	0.2310	Normal Distribution
Distribution	Shapiro-Wilk W Normality Test	0.928	0.884	0.0879	Normal Distribution

Cell Density Summary

Conc-µg/L	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	4	1.340E+6	1.233E+6	1.446E+6	1.360E+6	1.244E+6	1.394E+6	3.347E+4	5.00%	0.00%
20		4	1.341E+6	1.256E+6	1.426E+6	1.353E+6	1.272E+6	1.385E+6	2.670E+4	3.98%	-0.09%
40		4	1.247E+6	1.191E+6	1.303E+6	1.240E+6	1.214E+6	1.293E+6	1.755E+4	2.81%	6.92%
80		4	1.192E+6	1.104E+6	1.279E+6	1.205E+6	1.121E+6	1.235E+6	2.743E+4	4.60%	11.05%
140		4	9.560E+5	9.150E+5	9.970E+5	9.620E+5	9.230E+5	9.770E+5	1.289E+4	2.70%	28.63%
180		4	5.682E+5	5.158E+5	6.207E+5	5.595E+5	5.390E+5	6.150E+5	1.647E+4	5.80%	57.58%

Selenastrum Growth Test

Aquatic Bioassay & Consulting Labs, Inc.

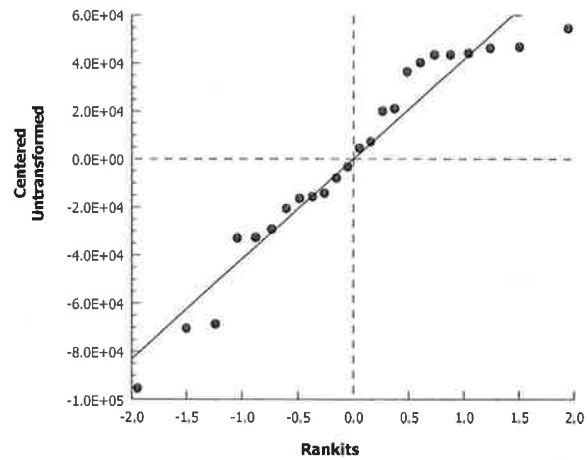
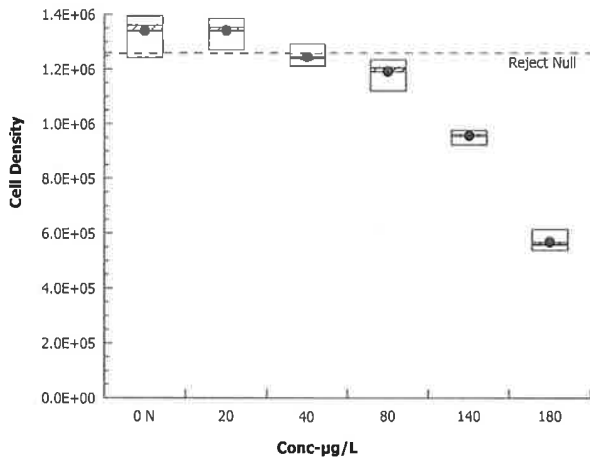
Analysis ID: 12-5258-0943 Endpoint: Cell Density
 Analyzed: 19 Jan-17 16:21 Analysis: Parametric-Control vs Treatments

CETIS Version: CETISv1.9.2
 Official Results: Yes

Cell Density Detail

Conc-µg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.376E+6	1.244E+6	1.344E+6	1.394E+6
20		1.325E+6	1.385E+6	1.272E+6	1.381E+6
40		1.254E+6	1.226E+6	1.293E+6	1.214E+6
80		1.235E+6	1.235E+6	1.121E+6	1.175E+6
140		9.770E+5	9.230E+5	9.480E+5	9.760E+5
180		5.650E+5	6.150E+5	5.390E+5	5.540E+5

Graphics



CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 018 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year	
Test America Contact: Unvashi Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 Sampler: Dan Smith		TestAmerica's services under this COC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-19. TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		MS/MSD			
Sample Description Outfall 018	Sample Matrix WM	Sampling Date/Time 2/8/2017 / 0915	Container Type 1L Poly	# of Cont. 1	Preservative None	Bottle # 200	MS/MSD No	Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Comments 440-175978 Chain of Custody
Sample Description Outfall 018	Sample Matrix WM	Sampling Date/Time 2/8/2017 / 0915	Container Type borosilicate vials	# of Cont. 1	Preservative None	Bottle # 320	MS/MSD No	Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Comments 440-175978 Chain of Custody
Sample Description Outfall 018	Sample Matrix WM	Sampling Date/Time 2/8/2017 / 0915	Container Type 500 mL Poly	# of Cont. 1	Preservative MeOH	Bottle # 220	MS/MSD No	Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Comments 440-175978 Chain of Custody
Sample Description Outfall 018	Sample Matrix WM	Sampling Date/Time 2/8/2017 / 0915	Container Type 2.5 Cell Cube	# of Cont. 1	Preservative None	Bottle # 225	MS/MSD No	Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Comments 440-175978 Chain of Custody
Sample Description Outfall 018	Sample Matrix WM	Sampling Date/Time 2/8/2017 / 0915	Container Type 1L Glass Amber	# of Cont. 1	Preservative None	Bottle # 230	MS/MSD No	Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Comments 440-175978 Chain of Custody
Sample Description Outfall 018	Sample Matrix WM	Sampling Date/Time 2/8/2017 / 0915	Container Type 1 Gall Cube	# of Cont. 8	Preservative None	Bottle # 235	MS/MSD No	Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Comments 440-175978 Chain of Custody

Relinquished By: *[Signature]* Date/Time: 2/8/17 1030 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2/8/17 1350 Company: TA
 Relinquished By: *[Signature]* Date/Time: 2/8/17 1330 Company: TA
 Turn-around time: (Check) 24 Hour: 72 Hour: 10 Day:
 48 Hour: 5 Day: Normal:
 Sample Integrity: (Check) Intact: On Ice:
 Store samples for 6 months. Data Requirements: (Check) No Level IV: All Level IV:
 1.4/1.7 1.3/1.4 1.1/1.4 0.9/1.2 2.0/2.9
 2.1/2.4 2.1/2.4 0.8/1.1 1.2 2.0 2.9
 1R-SC60



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175978-1

Login Number: 175978

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175978-1

Login Number: 175978

List Number: 2

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 02/10/17 11:33 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-175978-3	Outfall018_20170208_Comp		73		67		83		70
440-175978-3 - RA	Outfall018_20170208_Comp				67				
MB 320-150514/1-A	Method Blank		66		65		75		67
MB 320-150514/1-A - RA	Method Blank				61				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-175978-3	Outfall018_20170208_Comp		75		76		84		76
440-175978-3 - RA	Outfall018_20170208_Comp								
MB 320-150514/1-A	Method Blank		76		78		82		75
MB 320-150514/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-175978-3	Outfall018_20170208_Comp		80		80		85	84	
440-175978-3 - RA	Outfall018_20170208_Comp								
MB 320-150514/1-A	Method Blank		76		66		78	73	
MB 320-150514/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-175978-3	Outfall018_20170208_Comp		79		89		91
440-175978-3 - RA	Outfall018_20170208_Comp						
MB 320-150514/1-A	Method Blank		75		74		75
MB 320-150514/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-150514/2-A	Lab Control Sample	72	70	83	74	82	81	84	80
LCSD 320-150514/3-A	Lab Control Sample Dup	63	62	76	67	76	78	84	77

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-150514/2-A	Lab Control Sample	80	71	81	80	80	81	84
LCSD 320-150514/3-A	Lab Control Sample Dup	79	67	78	75	77	76	78

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF1 = 13C-1,2,3,7,8-PeCDF

PeCDF2 = 13C-2,3,4,7,8-PeCDF

HxCDD1 = 13C-1,2,3,4,7,8-HxCDD

HxCDD2 = 13C-1,2,3,6,7,8-HxCDD

HxCDF1 = 13C-1,2,3,4,7,8-HxCDF

HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF

HxCDF3 = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175978-2

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 9:40:01 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 9:40:01 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175978-3	Outfall018_20170208_Comp	Water	02/08/17 09:15	02/08/17 13:30

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Job ID: 440-175978-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175978-2

Comments

No additional comments.

Receipt

The samples were received on 2/8/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.1° C, 1.2° C, 1.4° C, 1.6° C, 1.7° C, 2.4° C, 2.4° C and 2.9° C.

RAD

Method(s) 905: Strontium-90 Prep Batch 160-292776:

The absolute value of the negative result for the following sample is outside the three sigma uncertainty: Outfall018_20170208_Comp (440-175978-3). A recount was not possible due to the passing of a full decay cycle of yttrium-90. The data has been qualified and reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	1.62	U	1.11	1.12	3.00	1.65	pCi/L	03/03/17 08:15	03/10/17 11:51	1
Gross Beta	2.32		0.802	0.835	4.00	1.12	pCi/L	03/03/17 08:15	03/10/17 11:51	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.465	U	7.17	7.17	20.0	13.0	pCi/L	02/13/17 14:36	02/14/17 04:26	1
Potassium-40	4.70	U	118	118		176	pCi/L	02/13/17 14:36	02/14/17 04:26	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0582	U	0.165	0.165	1.00	0.360	pCi/L	02/13/17 11:24	03/07/17 06:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.1		40 - 110					02/13/17 11:24	03/07/17 06:01	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0835	U	0.233	0.233	1.00	0.403	pCi/L	02/13/17 12:05	03/06/17 14:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.1		40 - 110					02/13/17 12:05	03/06/17 14:11	1
Y Carrier	92.0		40 - 110					02/13/17 12:05	03/06/17 14:11	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.372	U	0.233	0.235	3.00	0.472	pCi/L	02/16/17 09:55	02/27/17 11:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	62.2		40 - 110					02/16/17 09:55	02/27/17 11:12	1
Y Carrier	85.6		40 - 110					02/16/17 09:55	02/27/17 11:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-137	U	178	179	500	339	pCi/L	03/07/17 09:09	03/07/17 17:47	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.0653	U	0.09385	0.09403	1.00	0.147	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.5		30 - 110					02/21/17 13:19	02/24/17 17:20	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	295726	03/03/17 08:15	MRB	TAL SL
Total/NA	Analysis	900.0		1			297171	03/10/17 11:51	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	292056	02/13/17 14:36	R1S	TAL SL
Total/NA	Analysis	901.1		1			292238	02/14/17 04:26	CDR	TAL SL
Total/NA	Prep	PrecSep-21			1000.65 mL	1.0 g	292028	02/13/17 11:24	MBC	TAL SL
Total/NA	Analysis	903.0		1			296226	03/07/17 06:01	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.65 mL	1.0 g	292032	02/13/17 12:05	MBC	TAL SL
Total/NA	Analysis	904.0		1			296097	03/06/17 14:11	ALD	TAL SL
Total/NA	Prep	PrecSep-7			1000.13 mL	1.0 g	292776	02/16/17 09:55	BME	TAL SL
Total/NA	Analysis	905		1			294480	02/27/17 11:12	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.5 mL	1.0 g	296336	03/07/17 09:09	JDL	TAL SL
Total/NA	Analysis	906.0		1			296562	03/07/17 17:47	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.37 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294626	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-295726/1-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295726

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.4199	U	0.555	0.558	3.00	1.19	pCi/L	03/03/17 08:15	03/10/17 11:51	1
Gross Beta	-0.3095	U	0.536	0.537	4.00	1.00	pCi/L	03/03/17 08:15	03/10/17 11:51	1

Lab Sample ID: LCS 160-295726/2-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	47.25		6.90	3.00	1.82	pCi/L	95	73 - 133

Lab Sample ID: LCSB 160-295726/3-A
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	91.0	90.52		9.60	4.00	1.13	pCi/L	99	75 - 125

Lab Sample ID: 440-175840-G-1-N MS
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.992	U	49.9	40.06		6.01	3.00	1.64	pCi/L	80	60 - 140

Lab Sample ID: 440-175840-G-1-O MSD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
						Uncert. (2σ+/-)							
Gross Alpha	0.992	U	49.9	30.30		4.78	3.00	1.56	pCi/L	61	60 - 140	0.90	1

Lab Sample ID: 440-175840-G-1-P MSBT
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Beta	2.81		91.0	92.89		9.82	4.00	0.991	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-175840-G-1-Q MSBTD
Matrix: Water
Analysis Batch: 297171

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295726

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	2.81		91.0	93.16		9.85	4.00	0.971	pCi/L	99	60 - 140	0.01	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-292056/1-A
Matrix: Water
Analysis Batch: 292247

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292056

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	1.451	U	6.76	6.76	20.0	11.8	pCi/L	02/13/17 14:36	02/14/17 14:20	1
Potassium-40	-78.47	U	152	152		201	pCi/L	02/13/17 14:36	02/14/17 14:20	1

Lab Sample ID: LCS 160-292056/2-A
Matrix: Water
Analysis Batch: 292012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292056

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	129300		14900		389	pCi/L	95	90 - 111
Cesium-137	47000	47050		4720	20.0	118	pCi/L	100	90 - 111
Cobalt-60	39800	39010		3860		72.2	pCi/L	98	89 - 110

Lab Sample ID: 440-175978-3 DU
Matrix: Water
Analysis Batch: 292247

Client Sample ID: Outfall018_20170208_Comp
Prep Type: Total/NA
Prep Batch: 292056

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	0.465	U	-0.2012	U	11.4	20.0	19.8	pCi/L	0.04	1
Potassium-40	4.70	U	-24.17	U	156		201	pCi/L	0.11	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292028/1-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292028

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.09280	U	0.162	0.162	1.00	0.285	pCi/L	02/13/17 11:24	03/07/17 06:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					02/13/17 11:24	03/07/17 06:00	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292028/2-A
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.3	10.97		1.36	1.00	0.265	pCi/L	97	68 - 137
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	90.9		40 - 110						

Lab Sample ID: 440-175840-G-1-A MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.110	U	11.3	10.98		1.43	1.00	0.316	pCi/L	97	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	70.8		40 - 110								

Lab Sample ID: 440-175840-G-1-B MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292028

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.110	U	11.3	11.35		1.46	1.00	0.326	pCi/L	101	75 - 138	0.13	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	72.0		40 - 110										

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292032/1-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292032

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1981	U	0.244	0.245	1.00	0.404	pCi/L	02/13/17 12:05	03/06/17 14:13	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.3		40 - 110					02/13/17 12:05	03/06/17 14:13	1
Y Carrier	87.1		40 - 110					02/13/17 12:05	03/06/17 14:13	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-292032/2-A
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	14.29		1.52	1.00	0.344	pCi/L	104	56 - 140
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	90.9		40 - 110						
Y Carrier	96.1		40 - 110						

Lab Sample ID: 440-175840-G-1-C MS
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.00442	U	13.8	15.32		1.69	1.00	0.503	pCi/L	111	45 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	70.8		40 - 110								
Y Carrier	92.3		40 - 110								

Lab Sample ID: 440-175840-G-1-D MSD
Matrix: Water
Analysis Batch: 296097

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292032

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.00442	U	13.7	15.21		1.67	1.00	0.504	pCi/L	111	45 - 150	0.03	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	72.0		40 - 110										
Y Carrier	92.0		40 - 110										

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-292776/1-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292776

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.07316	U	0.188	0.188	3.00	0.322	pCi/L	02/16/17 09:55	02/27/17 11:11	1
MB MB										
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac				
Sr Carrier	82.7		40 - 110	02/16/17 09:55	02/27/17 11:11	1				
Y Carrier	95.0		40 - 110	02/16/17 09:55	02/27/17 11:11	1				

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: LCS 160-292776/2-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.847		0.916	3.00	0.351	pCi/L	104	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	81.4		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-176655-Q-1-F MS
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.0146	U	8.50	8.744		0.942	3.00	0.350	pCi/L	103	19 - 150
MS MS											
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	65.6		40 - 110								
Y Carrier	92.7		40 - 110								

Lab Sample ID: 440-176655-Q-1-G MSD
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.0146	U	8.50	9.105		0.939	3.00	0.287	pCi/L	107	19 - 150	0.19	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	78.2		40 - 110										
Y Carrier	91.6		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-296336/1-A
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296336

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-81.08	U	184	184	500	339	pCi/L	03/07/17 09:09	03/07/17 16:17	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 906.0 - Tritium, Total (LSC) (Continued)

Lab Sample ID: LCS 160-296336/2-A
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296336

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2940	2721		431	500	340	pCi/L	93	74 - 114

Lab Sample ID: 160-21120-F-5-B MSD
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296336

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-173	U	2930	2928		452	500	345	pCi/L	100	67 - 130	0.38	1

Lab Sample ID: 160-21120-G-5-A MS
Matrix: Water
Analysis Batch: 296562

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296336

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-173	U	2940	2599		420	500	340	pCi/L	88	67 - 130

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.4		30 - 110					02/21/17 13:19	02/24/17 17:20	1

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	13.91		1.67	1.00	0.145	pCi/L	109	84 - 120
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121
Tracer	LCS %Yield	LCS Qualifier	Limits						
Uranium-232	85.9		30 - 110						

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limits
Uranium-234	1.39		12.7	13.45		1.60	1.00	0.135	pCi/L	95	65 - 146	
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	88.1		30 - 110									

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	1.39		12.7	13.47		1.59	1.00	0.119	pCi/L	95	65 - 146		0.01	1
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143		0.42	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	87.1		30 - 110											

Lab Sample ID: 440-175840-G-1-G MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.	
	Result	Qual		Result	Qual						Limits	Limits
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146	
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143	
MS MS												
Tracer	%Yield	Qualifier	Limits									
Uranium-232	96.2		30 - 110									

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec.		RER	Limit
	Result	Qual		Result	Qual						Limits	Limits	RER	Limit
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146		0.11	1
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143		0.56	1
MSD MSD														
Tracer	%Yield	Qualifier	Limits											
Uranium-232	82.1		30 - 110											

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	66.9		30 - 110								

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
	Result	Qual		Result	Qual								
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	85.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Rad

Prep Batch: 292028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	PrecSep-21	
MB 160-292028/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292028/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-175840-G-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-175840-G-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 292032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	PrecSep_0	
MB 160-292032/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292032/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-175840-G-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-175840-G-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 292056

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-292056/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-292056/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-175978-3 DU	Outfall018_20170208_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	PrecSep-7	
MB 160-292776/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-292776/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-176655-Q-1-F MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-176655-Q-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 295726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	Evaporation	
MB 160-295726/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-295726/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-295726/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-175840-G-1-N MS	Matrix Spike	Total/NA	Water	Evaporation	
440-175840-G-1-O MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-175840-G-1-P MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-175840-G-1-Q MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Prep Batch: 296336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-296336/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-296336/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-21120-F-5-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	
160-21120-G-5-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 018 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year
Test America Contact: Unvashi Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 Sampler: Dan Smith		TestAmerica's services under this COC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-19. TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		440-175978 Chain of Custody		
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 018	Outfall018_20170208_Comp_F	2/8/2017 / 0915	WM	1L Poly	1	None	200	No
			WM	biosorbicate vials	1	None	320	No
			WM	500 mL Poly	1	MeOH	220	No
			WM	2.5 Cell Cube	1	None	225	No
			WM	1L Glass Amber	1	None	230	No
			WM	1 Gall Cube	8	None	235	No

Received By: *[Signature]* Date/Time: 2/8/17 1030
 Company: JHA
 Received By: *[Signature]* Date/Time: 2/8/17 1350
 Company: TA
 Received By: *[Signature]* Date/Time: 2/8/17 1330
 Company:
 1.4/1.7.13/1.4.1.1/1.4.0.9/1.2.2.0.2.9
 2.1/2.4.2.1/2.4.0.8/1.1.1.2.2.0.2.9
 1R-SCD



CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p> <p>Test America Contact: Urveshi Patel 17461 Deiran Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p> <p>Sampler: Dan Smith</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 018 Comp</p> <p>Project Manager: Katherine Miller 520-289-8606, 520-904-6944 (cell)</p> <p>Field Manager: Mark Dominick 818-350-7312, 818-599-0702 (cell)</p>		<p>ANALYSIS REQUIRED</p> <p>Total Recoverable Metals: Mercury (E245.1) (SVOCs E625) 2,4,6 TCP, 2,4 Dinitrophenol, Bis(2-ethylhexyl)phthalate, NDMA, PCP alpha-BHC (E608) Ammonia-N (350.2) TSS (160.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Chloride (E300) Cyanide, Nitrite-N, Nitrate-N, NO3+NO2-N, Sulfate (MBAS) (SM540C/E425.1) (E405.1) (SM5210B, BODCalb) BOD5 (20 degree C) TCDD (and all congeners) (E1813B) Total Recoverable Metals: (E200.7), Zn (E200.8), Cu, Pb, Cd, Se</p>		<p>Comments</p> <p>48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.</p>													
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container: Type	# of Cont.	Preservative	Bottle #	MS/MSD	TCDD (and all congeners) (E1813B)	BOD5 (20 degree C) (E405.1) (SM5210B, BODCalb)	Sulfate (MBAS) (SM540C/E425.1)	Cyanide, Nitrite-N, Nitrate-N, NO3+NO2-N, Chloride (E300)	Turbidity, TDS (SM2540C/E180.1)	TSS (160.2 (SM2540D))	Ammonia-N (350.2)	alpha-BHC (E608)	2,4,6 TCP, 2,4 Dinitrophenol, Bis(2-ethylhexyl)phthalate, NDMA, PCP (SVOCs E625)	Total Recoverable Metals: Mercury (E245.1)	
Outfall 018	Outfall018_20170206_Comp	2/8/2017/0915	WM	500 mL Poly	1	HNO3	90	No	X	X	X	X	X	X	X	X	X	X	X
			WM	1 L Glass Amber	2	None	110	No											
			WM	1 L Poly	1	None	115	No											
			WM	500 mL Poly	2	None	120	No											
			WM	500 mL Poly	2	None	130	No											
			WM	500 mL Poly	1	None	150	No											
			WM	500 mL Poly	1	H2SO4	160	No											
			WM	1 L Glass Amber	2	None	170	No											
			WM	1 L Glass Amber	2	None	180	No											
			WM	1 L Poly	1	None	185	No											
			WM	Nonsterilicate vials	1	HNO3	346	No											
			WM	1 L Glass Amber	2	None	110	No											
			WM	500 mL Poly	2	None	120	No											
			WM	500 mL Poly	2	None	130	No											
			WM	1 L Glass Amber	2	None	170	No											

Relinquished By:	Date/Time: 2/8/17 1030 STA	Company: STA	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____
Relinquished By:	Date/Time: 2/8/17 1330 TA	Company: TA	Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/>



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175978-2

Login Number: 175978

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175978-2

Login Number: 175978

List Number: 3

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/10/17 01:44 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-175840-G-1-A MS	Matrix Spike	70.8
440-175840-G-1-B MSD	Matrix Spike Duplicate	72.0
440-175978-3	Outfall018_20170208_Comp	79.1
LCS 160-292028/2-A	Lab Control Sample	90.9
MB 160-292028/1-A	Method Blank	87.3

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-175840-G-1-C MS	Matrix Spike	70.8	92.3
440-175840-G-1-D MSD	Matrix Spike Duplicate	72.0	92.0
440-175978-3	Outfall018_20170208_Comp	79.1	92.0
LCS 160-292032/2-A	Lab Control Sample	90.9	96.1
MB 160-292032/1-A	Method Blank	87.3	87.1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-175978-3	Outfall018_20170208_Comp	62.2	85.6
440-176655-Q-1-F MS	Matrix Spike	65.6	92.7
440-176655-Q-1-G MSD	Matrix Spike Duplicate	78.2	91.6
LCS 160-292776/2-A	Lab Control Sample	81.4	92.7
MB 160-292776/1-A	Method Blank	82.7	95.0

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-E MS	Matrix Spike	88.1
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1
440-175840-G-1-G MS	Matrix Spike	96.2

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-175978-3	Outfall018_20170208_Comp	91.5
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175978-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 5, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175978-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170208_ Comp	440-175978-3	N/A	Water	2/8/17 9:15 AM	E200.8
Outfall018_20170208_ Comp_F	440-175978-1	N/A	Water	2/8/17 9:15 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175978-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in this SDG; therefore, the sample collection dates and times on the COC do not match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHODS 200.8— METALS

Kathryn Okonzak-Lowry of MEC^X reviewed the SDG on April 5, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met, were met with the following exception. Sample Outfall018_20170208_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 5 days after receipt. The dissolved metal result from this sample was qualified as estimated (J).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the metals were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks of sufficient concentration to qualify site sample results.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20170208_Comp for the ICP/MS method only. MS/MSD analyses were not performed on sample Outfall018_20170208_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.



IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. When the sample results were qualified and the reviewer was able to clearly determine bias, detected results were qualified as either J+ or J-; otherwise, bias was not indicated in the qualification. Detects below the RL were qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401759784

Analysis Method E200.8

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	7.6	20	2.5	ug/L	J,DX	J	DNQ

Sample Name Outfall018_20170208_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	4.6	20	2.5	ug/L	J,DXQP	J	DNQ, H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175978-4

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/5/2017 3:26:28 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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Expert**

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/5/2017 3:26:28 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175978-1	Outfall018_20170208_Comp_F	Water	02/08/17 09:15	02/08/17 13:30
440-175978-3	Outfall018_20170208_Comp	Water	02/08/17 09:15	02/08/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Job ID: 440-175978-4

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-175978-4**

Comments

200.7 metals analyzed with 200.8 method with 200.7 RLs.

Receipt

The samples were received on 2/8/2017 1:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.1° C, 1.2° C, 1.4° C, 1.6° C, 1.7° C, 2.4° C, 2.4° C and 2.9° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Client Sample ID: Outfall018_20170208_Comp_F

Lab Sample ID: 440-175978-1

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	4.6	J,DX QP	20	2.5	ug/L		02/14/17 18:13	02/15/17 12:51	1

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	7.6	J,DX	20	2.5	ug/L		02/18/17 09:59	02/20/17 00:33	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Client Sample ID: Outfall018_20170208_Comp_F

Lab Sample ID: 440-175978-1

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388058	02/13/17 15:42	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	388279	02/14/17 18:13	K1E	TAL IRV
Dissolved	Analysis	200.8		1			388477	02/15/17 12:51	RC	TAL IRV

Client Sample ID: Outfall018_20170208_Comp

Lab Sample ID: 440-175978-3

Date Collected: 02/08/17 09:15

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	389069	02/18/17 09:59	K1E	TAL IRV
Total Recoverable	Analysis	200.8		1			389235	02/20/17 00:33	EN	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389069/1-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/18/17 09:59	02/19/17 23:50	1

Lab Sample ID: LCS 440-389069/2-A
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	79.7		ug/L		100	85 - 115

Lab Sample ID: 440-175978-3 MS
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Outfall018_20170208_Comp
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	7.64		80.0	86.0		ug/L		98	70 - 130

Lab Sample ID: 440-175978-3 MSD
Matrix: Water
Analysis Batch: 389235

Client Sample ID: Outfall018_20170208_Comp
Prep Type: Total Recoverable
Prep Batch: 389069

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	7.64		80.0	91.9		ug/L		105	70 - 130	7	20

Lab Sample ID: MB 440-388058/1-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 388279

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	2.5	ug/L		02/14/17 18:13	02/15/17 12:21	1

Lab Sample ID: LCS 440-388058/2-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	74.2		ug/L		93	85 - 115

Lab Sample ID: LCSD 440-388058/23-B
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Lab Control Sample Dup
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	80.0	74.7		ug/L		93	85 - 115	1	20

Lab Sample ID: 440-175637-C-2-C MS
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	3.4	J,DX QP	80.0	75.3		ug/L		90	70 - 130

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Lab Sample ID: 440-175637-C-2-D MSD
Matrix: Water
Analysis Batch: 388477

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 388279

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	3.4	J,DX QP	80.0	72.5		ug/L		86	70 - 130	4	20

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QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Metals

Filtration Batch: 388058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388058/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	FILTRATION	
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 388279

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	200.2	388058
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.2	388058
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.2	388058
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.2	388058
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.2	388058
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	388058

Analysis Batch: 388477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-1	Outfall018_20170208_Comp_F	Dissolved	Water	200.8	388279
MB 440-388058/1-B	Method Blank	Dissolved	Water	200.8	388279
LCS 440-388058/2-B	Lab Control Sample	Dissolved	Water	200.8	388279
LCSD 440-388058/23-B	Lab Control Sample Dup	Dissolved	Water	200.8	388279
440-175637-C-2-C MS	Matrix Spike	Dissolved	Water	200.8	388279
440-175637-C-2-D MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	388279

Prep Batch: 389069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total Recoverable	Water	200.2	
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-175978-3 MS	Outfall018_20170208_Comp	Total Recoverable	Water	200.2	
440-175978-3 MSD	Outfall018_20170208_Comp	Total Recoverable	Water	200.2	

Analysis Batch: 389235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175978-3	Outfall018_20170208_Comp	Total Recoverable	Water	200.8	389069
MB 440-389069/1-A	Method Blank	Total Recoverable	Water	200.8	389069
LCS 440-389069/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389069
440-175978-3 MS	Outfall018_20170208_Comp	Total Recoverable	Water	200.8	389069
440-175978-3 MSD	Outfall018_20170208_Comp	Total Recoverable	Water	200.8	389069

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Qualifiers

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-175978-4

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 018 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Filter and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year
Test America Contact: Unvashi Patel 17461 Denian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 Sampler: Dan Smith		TestAmerica's services under this COC shall be performed in accordance with the T&Cs within Blanket Service Agreement 2015-19. TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se Cyanide (SM4500-CNE / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (T-3) (E908.0), Sr-90 (E905.0), Total Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		440-175978 Chain of Custody		
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 018	Outfall018_20170208_Comp_F	2/8/2017 / 0915	WM	1L Poly	1	None	200	No
			WM	biosorbicate vials	1	None	320	No
			WM	500 mL Poly	1	MeOH	220	No
			WM	2.5 Cell Cube	1	None	225	No
			WM	1L Glass Amber	1	None	230	No
			WM	1 Gall Cube	8	None	235	No

Relinquished By: *[Signature]* Date/Time: 2/8/17 1030 Company: JHA
 Relinquished By: *[Signature]* Date/Time: 2-8-17 1350 Company: A
 Relinquished By: *[Signature]* Date/Time: 2/8/17 1330 Company:
 Turn-around time: (Check) 24 Hour: 72 Hour: 10 Day: X
 48 Hour: 5 Day: Normal:
 Sample Integrity: (Check) Intact: On Ice:
 Store samples for 6 months. Data Requirements: (Check) No Level IV: All Level IV: X
 1.4/1.7 1.3/1.4 1.1/1.4 0.9/1.2 2.0/2.9
 2.1/2.4 2.1/2.4 0.8/1.1 1.2 2.0/2.9
 1R-SCD

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175978-4

Login Number: 175978

List Source: TestAmerica Irvine

List Number: 1

Creator: Soderblom, Tim

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176630-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 27, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-176630-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170210_ Grab	440-176630-1	N/A	Water	2/10/17 3:30 PM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176630-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170210 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA Methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis and no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401766301

Analysis Method E120.1

Sample Name Outfall018_20170210_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/10/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-176630-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	350	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall018_20170210_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/10/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-176630-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.4	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall018_20170210_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/10/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-176630-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall018_20170210_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/10/2017 3:30:00 PM Validation Level: 8

Lab Sample Name: 440-176630-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176630-1

Client Project/Site: Ruotine Outfall 018 Grab

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/23/2017 12:20:51 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/23/2017 12:20:51 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176630-1	Outfall018_20170210_Grab	Water	02/10/17 15:30	02/11/17 14:04
440-176630-3	TB-20170210	Water	02/10/17 15:30	02/11/17 14:04

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Job ID: 440-176630-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-176630-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Receipt

The samples were received on 2/11/2017 2:04 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

Method(s) 120.1, SM 2510B: The conductivity results were reported at a dilution and may have increased error compared to an undiluted samples. 2510B

(440-176948-B-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with. The laboratory control sample (LCS0) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Client Sample ID: Outfall018_20170210_Grab

Lab Sample ID: 440-176630-1

Date Collected: 02/10/17 15:30

Matrix: Water

Date Received: 02/11/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/16/17 12:41	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/16/17 12:41	1
Trichloroethene	ND		0.50	0.25	ug/L			02/16/17 12:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					02/16/17 12:41	1
Dibromofluoromethane (Surr)	109		76 - 132					02/16/17 12:41	1
Toluene-d8 (Surr)	103		80 - 128					02/16/17 12:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.4	1.5	mg/L		02/24/17 06:53	02/24/17 11:31	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	350		1.0	1.0	umhos/cm			02/21/17 07:46	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/11/17 17:18	1

Client Sample ID: TB-20170210

Lab Sample ID: 440-176630-3

Date Collected: 02/10/17 15:30

Matrix: Water

Date Received: 02/11/17 14:04

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/16/17 13:11	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/16/17 13:11	1
Trichloroethene	ND		0.50	0.25	ug/L			02/16/17 13:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120					02/16/17 13:11	1
Dibromofluoromethane (Surr)	106		76 - 132					02/16/17 13:11	1
Toluene-d8 (Surr)	106		80 - 128					02/16/17 13:11	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Client Sample ID: Outfall018_20170210_Grab

Lab Sample ID: 440-176630-1

Date Collected: 02/10/17 15:30

Matrix: Water

Date Received: 02/11/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	388594	02/16/17 12:41	RM	TAL IRV
Total/NA	Analysis	120.1		1			389479	02/21/17 07:46	XL	TAL IRV
Total/NA	Prep	1664A			930 mL	1000 mL	390311	02/24/17 06:53	L1A	TAL IRV
Total/NA	Analysis	1664A		1			390396	02/24/17 11:31	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	387859	02/11/17 17:18	RB	TAL IRV

Client Sample ID: TB-20170210

Lab Sample ID: 440-176630-3

Date Collected: 02/10/17 15:30

Matrix: Water

Date Received: 02/11/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	388594	02/16/17 13:11	RM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-388594/4
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/16/17 08:35	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/16/17 08:35	1
Trichloroethene	ND		0.50	0.25	ug/L			02/16/17 08:35	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		02/16/17 08:35	1
Dibromofluoromethane (Surr)	106		76 - 132		02/16/17 08:35	1
Toluene-d8 (Surr)	106		80 - 128		02/16/17 08:35	1

Lab Sample ID: LCS 440-388594/5
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	24.5		ug/L		98	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.3		ug/L		101	63 - 130
1,1,2-Trichloroethane	25.0	26.1		ug/L		105	70 - 130
1,1-Dichloroethane	25.0	26.2		ug/L		105	64 - 130
1,1-Dichloroethene	25.0	23.2		ug/L		93	70 - 130
1,2-Dichlorobenzene	25.0	24.7		ug/L		99	70 - 130
1,2-Dichloroethane	25.0	27.7		ug/L		111	57 - 138
1,2-Dichloropropane	25.0	25.9		ug/L		104	67 - 130
1,3-Dichlorobenzene	25.0	25.0		ug/L		100	70 - 130
1,4-Dichlorobenzene	25.0	25.1		ug/L		100	70 - 130
Benzene	25.0	24.5		ug/L		98	68 - 130
Bromoform	25.0	24.5		ug/L		98	60 - 148
Bromomethane	25.0	23.8		ug/L		95	64 - 139
Carbon tetrachloride	25.0	24.4		ug/L		98	60 - 150
Chlorobenzene	25.0	24.3		ug/L		97	70 - 130
Dibromochloromethane	25.0	25.1		ug/L		101	69 - 145
Chloroethane	25.0	24.7		ug/L		99	64 - 135
Chloroform	25.0	26.4		ug/L		106	70 - 130
Chloromethane	25.0	25.7		ug/L		103	47 - 140
cis-1,3-Dichloropropene	25.0	25.3		ug/L		101	70 - 133
Bromodichloromethane	25.0	27.3		ug/L		109	70 - 132
Ethylbenzene	25.0	23.2		ug/L		93	70 - 130
Methylene Chloride	25.0	25.2		ug/L		101	52 - 130
Tetrachloroethene	25.0	22.4		ug/L		90	70 - 130
Toluene	25.0	24.0		ug/L		96	70 - 130
trans-1,2-Dichloroethene	25.0	26.6		ug/L		107	70 - 130
trans-1,3-Dichloropropene	25.0	24.3		ug/L		97	70 - 132
Vinyl chloride	25.0	24.1		ug/L		96	59 - 133
Trichloroethene	25.0	24.7		ug/L		99	70 - 130
cis-1,2-Dichloroethene	25.0	27.2		ug/L		109	70 - 133
Naphthalene	25.0	25.7		ug/L		103	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-388594/5
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	100		80 - 128

Lab Sample ID: 440-176628-A-1 MS
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
1,1,1-Trichloroethane	ND		25.0	22.6		ug/L		90	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	22.2		ug/L		89	63 - 130
1,1,2-Trichloroethane	ND		25.0	24.5		ug/L		98	70 - 130
1,1-Dichloroethane	ND		25.0	24.0		ug/L		96	65 - 130
1,1-Dichloroethene	ND		25.0	21.3		ug/L		85	70 - 130
1,2-Dichlorobenzene	ND		25.0	22.6		ug/L		90	70 - 130
1,2-Dichloroethane	ND		25.0	26.0		ug/L		104	56 - 146
1,2-Dichloropropane	ND		25.0	24.9		ug/L		100	69 - 130
1,3-Dichlorobenzene	ND		25.0	22.7		ug/L		91	70 - 130
1,4-Dichlorobenzene	ND		25.0	23.1		ug/L		92	70 - 130
Benzene	ND		25.0	22.9		ug/L		92	66 - 130
Bromoform	ND		25.0	22.8		ug/L		91	59 - 150
Bromomethane	ND		25.0	22.0		ug/L		88	62 - 131
Carbon tetrachloride	ND		25.0	22.2		ug/L		89	60 - 150
Chlorobenzene	ND		25.0	23.5		ug/L		94	70 - 130
Dibromochloromethane	ND		25.0	24.1		ug/L		96	70 - 148
Chloroethane	ND		25.0	22.7		ug/L		91	68 - 130
Chloroform	ND		25.0	24.9		ug/L		100	70 - 130
Chloromethane	ND		25.0	23.2		ug/L		93	39 - 144
cis-1,3-Dichloropropene	ND		25.0	24.6		ug/L		99	70 - 133
Bromodichloromethane	ND		25.0	25.8		ug/L		103	70 - 138
Ethylbenzene	ND		25.0	22.6		ug/L		90	70 - 130
Methylene Chloride	ND		25.0	23.5		ug/L		94	52 - 130
Tetrachloroethene	ND		25.0	21.3		ug/L		85	70 - 137
Toluene	ND		25.0	22.8		ug/L		91	70 - 130
trans-1,2-Dichloroethene	ND		25.0	24.2		ug/L		97	70 - 130
trans-1,3-Dichloropropene	ND		25.0	24.5		ug/L		98	70 - 138
Vinyl chloride	ND		25.0	21.1		ug/L		84	50 - 137
Trichloroethene	0.51		25.0	23.2		ug/L		91	70 - 130
cis-1,2-Dichloroethene	1.6		25.0	27.0		ug/L		102	70 - 130
Naphthalene	ND		25.0	22.4		ug/L		90	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	104		80 - 128

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-176628-A-1 MSD
Matrix: Water
Analysis Batch: 388594

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	24.1		ug/L		96	70 - 130	7	20
1,1,2,2-Tetrachloroethane	ND		25.0	22.2		ug/L		89	63 - 130	0	30
1,1,2-Trichloroethane	ND		25.0	25.0		ug/L		100	70 - 130	2	25
1,1-Dichloroethane	ND		25.0	25.4		ug/L		102	65 - 130	6	20
1,1-Dichloroethene	ND		25.0	19.8		ug/L		79	70 - 130	7	20
1,2-Dichlorobenzene	ND		25.0	24.0		ug/L		96	70 - 130	6	20
1,2-Dichloroethane	ND		25.0	25.9		ug/L		104	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	25.5		ug/L		102	69 - 130	3	20
1,3-Dichlorobenzene	ND		25.0	24.2		ug/L		97	70 - 130	7	20
1,4-Dichlorobenzene	ND		25.0	24.6		ug/L		98	70 - 130	6	20
Benzene	ND		25.0	24.0		ug/L		96	66 - 130	4	20
Bromoform	ND		25.0	23.3		ug/L		93	59 - 150	2	25
Bromomethane	ND		25.0	23.2		ug/L		93	62 - 131	5	25
Carbon tetrachloride	ND		25.0	23.7		ug/L		95	60 - 150	7	25
Chlorobenzene	ND		25.0	25.0		ug/L		100	70 - 130	6	20
Dibromochloromethane	ND		25.0	24.8		ug/L		99	70 - 148	3	25
Chloroethane	ND		25.0	23.4		ug/L		94	68 - 130	3	25
Chloroform	ND		25.0	26.2		ug/L		105	70 - 130	5	20
Chloromethane	ND		25.0	25.2		ug/L		101	39 - 144	8	25
cis-1,3-Dichloropropene	ND		25.0	25.2		ug/L		101	70 - 133	2	20
Bromodichloromethane	ND		25.0	26.9		ug/L		108	70 - 138	4	20
Ethylbenzene	ND		25.0	23.8		ug/L		95	70 - 130	5	20
Methylene Chloride	ND		25.0	27.9		ug/L		112	52 - 130	17	20
Tetrachloroethene	ND		25.0	22.7		ug/L		91	70 - 137	6	20
Toluene	ND		25.0	24.1		ug/L		97	70 - 130	6	20
trans-1,2-Dichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	6	20
trans-1,3-Dichloropropene	ND		25.0	25.1		ug/L		100	70 - 138	2	25
Vinyl chloride	ND		25.0	23.0		ug/L		92	50 - 137	9	30
Trichloroethene	0.51		25.0	24.6		ug/L		96	70 - 130	6	20
cis-1,2-Dichloroethene	1.6		25.0	28.6		ug/L		108	70 - 130	6	20
Naphthalene	ND		25.0	23.0		ug/L		92	60 - 140	3	30

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	105		76 - 132
Toluene-d8 (Surr)	104		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-389479/3
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0 umhos/cm			02/21/17 07:46	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-389479/4
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	761		umhos/cm		99	90 - 110

Lab Sample ID: 440-177384-C-1 DU
Matrix: Water
Analysis Batch: 389479

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	22		22.9		umhos/cm		4	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390311/1-A
Matrix: Water
Analysis Batch: 390396

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390311

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/24/17 06:53	02/24/17 11:31	1

Lab Sample ID: LCS 440-390311/2-A
Matrix: Water
Analysis Batch: 390396

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390311

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.5		mg/L		91	78 - 114

Lab Sample ID: LCSD 440-390311/3-A
Matrix: Water
Analysis Batch: 390396

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390311

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	33.0		mg/L		83	78 - 114	10	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

GC/MS VOA

Analysis Batch: 388594

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176630-1	Outfall018_20170210_Grab	Total/NA	Water	624	
440-176630-3	TB-20170210	Total/NA	Water	624	
MB 440-388594/4	Method Blank	Total/NA	Water	624	
LCS 440-388594/5	Lab Control Sample	Total/NA	Water	624	
440-176628-A-1 MS	Matrix Spike	Total/NA	Water	624	
440-176628-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 387859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176630-1	Outfall018_20170210_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 389479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176630-1	Outfall018_20170210_Grab	Total/NA	Water	120.1	
MB 440-389479/3	Method Blank	Total/NA	Water	120.1	
LCS 440-389479/4	Lab Control Sample	Total/NA	Water	120.1	
440-177384-C-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 390311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176630-1	Outfall018_20170210_Grab	Total/NA	Water	1664A	
MB 440-390311/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390311/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390311/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176630-1	Outfall018_20170210_Grab	Total/NA	Water	1664A	390311
MB 440-390311/1-A	Method Blank	Total/NA	Water	1664A	390311
LCS 440-390311/2-A	Lab Control Sample	Total/NA	Water	1664A	390311
LCSD 440-390311/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390311

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Ruotine Outfall 018 Grab

TestAmerica Job ID: 440-176630-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.


Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

EDDPJ6VX

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92106 Test America Contact: Unvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 018 Grab		Project Manager: Katherine Miller 520.289.8906, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.598.0702 (cell)		Meter serial # _____										
Test America's services under this CoC shall be performed in accordance with the T&Cs within Banked Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Sampler: Dan Smith		Field Readings QC Checked by: <i>Mark Dominick</i> 2/10/17 Date/Time: 1535		Field Readings (Include units) Time of Readings: 1530 DO: 4.12 mg/L pH: 8.12 pH unit Temp: 22.96 C/F										
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD	Oil & Grease (E188A,TEM)	VOCs - only 1,1-DCE, 1,2-DCA, TCE (E824)	Settleable Solids (E180.5 (SM2540F))	Conductivity (SM2510B / E120.1)	ANALYSIS REQUIRED	Field Readings	Meter serial #	
Outfall 018	Outfall018_20170210_Grab	2/10/2017 1530	WM	1 L Glass Amber	2	HCl	15	No	X							
			WM	40 mL VOA	3	HCl	30	No								
			WM	1 L Poly	1	None	70	No								
			WM	500 mL Poly	1	None	75	No								
			WM	1 L Glass Amber	2	HCl	15	No								
			WM	40 mL VOA	3	HCl	30	No								
			WM	500 mL Poly	1	None	75	No								
			WQ	40 mL VOA	3	HCl	30	No								
Trip Blanks	TB-20170210	2/10/2017 1530														
 440-176630 Chain of Custody																
Relinquished By	Date/Time	Company	Received By	Date/Time	Company	Turn-around time: (Check)	24 Hour	72 Hour	10 Day	X	48 Hour	5 Day	Normal	Sample Integrity: (Check)	Intact	On Ice
<i>[Signature]</i>	2/14/17 10:40	JHA ENV.	<i>[Signature]</i>	2/14/17 10:30	JHA ENV.											
Relinquished By	Date/Time	Company	Received By	Date/Time	Company	Store samples for 6 months.										
<i>[Signature]</i>	2/14/17 14:04	JHA ENV.	<i>[Signature]</i>	2/14/17 14:04	JHA ENV.											
Relinquished By	Date/Time	Company	Received By	Date/Time	Company	Data Requirements: (Check)										
<i>[Signature]</i>	2/14/17 14:04	JHA ENV.	<i>[Signature]</i>	2/14/17 14:04	JHA ENV.	No Level IV										

1.0/1.0
0.8/1.1
0.0/0.0 XSC



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176630-1

Login Number: 176630

List Number: 1

Creator: Garcia, Veronica G

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176654-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-176654-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170212_Comp	440-176654-1	N/A	Water	2/12/17 7:40 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall018_20170212_Comp_F	440-176654-3	N/A	Water	2/12/17 7:40 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176654-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine and TA-Sacramento.
- Samples for method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- Corrections to the original COC were not initialed and dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, HpCDF, HxCDD, and HxCDF in the method blank were the same peaks comprising the totals in sample Outfall018_20170212_Comp. The results for totals HpCDD, HpCDF, HxCDD, and HxCDF were qualified as nondetected (U). The reviewer verified that peaks comprising the remaining total result for TCDF in the sample included more peaks than the method blank



total. The sample result for total TCDF was therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Total TCDF containing an EMPC peak was qualified as estimated (J).



IV. METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^X reviewed the SDG on March 30, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detects in the method blanks or calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SERIAL DILUTION

Serial dilution analyses were not performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects below the RL were



qualified as estimated (J) and coded with DNQ in order to comply with the NPDES permit. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 5, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.

V.3.2. LABORATORY CONTROL SAMPLES

Recoveries of alpha BHC and the RPD were within the laboratory control limits of 37-134% and $\leq 35\%$, respectively.

V.3.3. SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy and precision based on the LCS/LCSD results.



V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Method 314.0*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110% and 85-115%, respectively. The MRL was recovered within the laboratory control limits of 75-125%. The interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The LCS recovery was within the method control limits of 85-115%.



VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. The reported nondetect is valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met for applicable target compounds. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or $r^2 \geq 0.990$. The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.



VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits. The reviewer noted target compound 2,4-dinitrotoluene was not spiked in the LCS/LCSD.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy and precision based on LCS/LCSD results.

VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas, with one exception. The recovery of 10% for perylene-d12 in the sample did not affect reported sample data, as the internal standard was not associated with the requested target compounds.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no issues with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

Due to limited sample volume provided, the extracted sample volume of 950 milliliters was less than the nominal extraction volume of 1000 milliliters. Reporting limits were adjusted accordingly.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1 EPA Methods 180.1 and 300.0, Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, and 5540, and the National Functional Guidelines for Inorganic Superfund Data Review (2014).*

VIII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were provided by the laboratory.

VIII.3. QUALITY CONTROL SAMPLES**VIII.3.1. METHOD BLANKS**

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs for BOD and total cyanide were $\leq 20\%$ and $\leq 10\%$, respectively.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall018_20170212_Comp for turbidity. The RPD was $\leq 20\%$.



VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

Sulfate in sample Outfall018_20170212_Comp was reported from a 5× dilution.

VIII.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401766541

Analysis Method E1613B

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000010	0.000096	0.00000015	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.0000036	0.000096	0.00000020	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000047	0.000048	0.00000010	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000011	0.000048	0.00000016	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000029	0.000048	0.00000013	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000024	0.000048	0.00000012	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000027	0.000048	0.00000013	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000036	0.000048	0.00000012	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000035	0.000048	0.00000014	ug/L	J,DXMBq	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000033	0.000048	0.00000011	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	ND	0.000048	0.00000011	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000048	0.00000015	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000048	0.00000019	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000021	0.000048	0.00000010	ug/L	J,DXMBq	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	ND	0.000048	0.00000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000096	0.0000013	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000062	0.000096	0.00000010	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000096	0.00000016	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.00000075	0.000048	0.00000012	ug/L	J,DXMBq	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000020	0.000048	0.00000016	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000011	0.000048	0.00000011	ug/L	J,DXMBq	U	B
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000062	0.000048	0.00000013	ug/L	J,DXMBq	U	B

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	ND	0.000048	0.00000014	ug/L	U	U	
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000048	0.00000019	ug/L	U	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000010	0.0000096	0.00000010	ug/L	J,DXMBq	J	B, DNQ, *III
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000096	0.00000016	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	0.19	0.10	0.040	NTU			

Analysis Method E200.8

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	1.7	2.0	0.50	ug/L	J,DX	J	DNQ
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Sample Name Outfall018_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	1.7	2.0	0.50	ug/L	J,DXQP	J	DNQ
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	U	

Analysis Method E245.1

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E245.1**Sample Name** Outfall018_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 7:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176654-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	U	

Analysis Method E300**Sample Name** Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 7:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	8.1	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.85	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.85	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	100	2.5	1.3	mg/L			

Analysis Method E314.0**Sample Name** Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 7:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 7:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0047	0.0024	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/12/2017 7:40:00 AM **Validation Level:** 8**Lab Sample Name:** 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	6.32	0.526	ug/L	U	U	

Analysis Method E625

2,4-Dinitrotoluene	N	121-14-2	ND	5.26	2.11	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	5.26	2.11	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	5.26	1.05	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	5.26	1.05	ug/L	U	U

Analysis Method SM2540C

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	250	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	ND	1.0	0.50	mg/L	U	U	

Analysis Method SM4500-CN-E

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method **SM5210B**

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.4	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.098	0.10	0.050	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176654-1

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/8/2017 5:44:25 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/8/2017 5:44:25 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176654-1	Outfall018_20170212_Comp	Water	02/12/17 07:40	02/12/17 13:46
440-176654-3	Outfall018_20170212_Comp_F	Water	02/12/17 07:40	02/12/17 13:46

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Job ID: 440-176654-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176654-1

Comments

No additional comments.

Receipt

The samples were received on 2/12/2017 1:46 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.4° C and 1.1° C.

GC/MS Semi VOA

Method(s) 625: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-387990 and analytical batch 440-388775. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

Method(s) 625: The surrogates in the Method Blank (MB) for preparation batch 440-387990 failed below lower acceptance limits. All samples in this batch are nondetect (ND) for all target analytes and have acceptable surrogate recoveries. The purpose of the MB is to provide evidence that the batch is free from lab contamination. Low failing surrogates in the MB suggests possible low bias of lab contaminants. Since all samples in the associated batch are ND for all target analytes, they are thus unaffected by the possibility of lab contamination. The following samples are reported with the affected MB: 440-176061-1, 440-176061-3, 440-176655-1, 440-176654-1, 440-176710-1.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-387990 and analytical batch 440-388775 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The recovery of bis(2-ethylhexyl)phthalate in the matrix spike (440-176655-H-1-B MSD) is over the upper ICAL range and reported as estimated.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-387990 and analytical batch 440-388775 was outside control limits for a few compounds. Sample matrix interference is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-387978 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Job ID: 440-176654-1 (Continued)

Laboratory: TestAmerica Irvine (Continued)

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.32	0.526	ug/L		02/14/17 07:16	02/16/17 22:38	1
Bis(2-ethylhexyl) phthalate	ND		5.26	2.11	ug/L		02/14/17 07:16	02/16/17 22:38	1
N-Nitrosodimethylamine	ND		5.26	1.05	ug/L		02/14/17 07:16	02/16/17 22:38	1
Pentachlorophenol	ND		5.26	1.05	ug/L		02/14/17 07:16	02/16/17 22:38	1
2,4-Dinitrotoluene	ND		5.26	2.11	ug/L		02/14/17 07:16	02/16/17 22:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	78		40 - 120	02/14/17 07:16	02/16/17 22:38	1
2-Fluorobiphenyl	73		50 - 120	02/14/17 07:16	02/16/17 22:38	1
2-Fluorophenol	70		30 - 120	02/14/17 07:16	02/16/17 22:38	1
Nitrobenzene-d5	73		45 - 120	02/14/17 07:16	02/16/17 22:38	1
Phenol-d6	67		35 - 120	02/14/17 07:16	02/16/17 22:38	1
Terphenyl-d14	80		37 - 144	02/14/17 07:16	02/16/17 22:38	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0047	0.0024	ug/L		02/15/17 06:22	02/15/17 21:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	72		10 - 150	02/15/17 06:22	02/15/17 21:13	1
DCB Decachlorobiphenyl (Surr)	86		18 - 134	02/15/17 06:22	02/15/17 21:13	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.1		0.50	0.25	mg/L			02/13/17 12:11	1
Nitrate as N	0.85		0.11	0.055	mg/L			02/13/17 12:11	1
Nitrite as N	ND		0.15	0.070	mg/L			02/13/17 12:11	1
Sulfate	100		2.5	1.3	mg/L			02/13/17 12:26	5

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/13/17 13:02	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.85		0.15	0.070	mg/L			02/24/17 14:12	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000096	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,7,8-PeCDD	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
2,3,4,7,8-PeCDF	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,4,7,8-HxCDD	0.0000027	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,6,7,8-HxCDD	0.0000035	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,7,8,9-HxCDD	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000024	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,6,7,8-HxCDF	0.0000036	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,7,8,9-HxCDF	0.0000033	J,DX MB	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
2,3,4,6,7,8-HxCDF	0.0000021	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,4,6,7,8-HpCDD	0.0000011	J,DX MB	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,4,6,7,8-HpCDF	0.0000047	J,DX MB	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
1,2,3,4,7,8,9-HpCDF	0.0000029	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
OCDD	0.0000036	J,DX MB q	0.000096	0.0000002	ug/L		02/15/17 08:22	02/16/17 20:35	1
OCDF	0.0000010	J,DX MB q	0.000096	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total TCDD	ND		0.000096	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total TCDF	0.0000010	J,DX MB q	0.000096	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total PeCDD	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total PeCDF	ND		0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total HxCDD	0.0000062	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total HxCDF	0.0000011	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total HpCDD	0.0000020	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1
Total HpCDF	0.0000075	J,DX MB q	0.000048	0.0000001	ug/L		02/15/17 08:22	02/16/17 20:35	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	74		25 - 164	02/15/17 08:22	02/16/17 20:35	1
13C-2,3,7,8-TCDF	72		24 - 169	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,7,8-PeCDD	84		25 - 181	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,7,8-PeCDF	76		24 - 185	02/15/17 08:22	02/16/17 20:35	1
13C-2,3,4,7,8-PeCDF	88		21 - 178	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,4,7,8-HxCDD	91		32 - 141	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,6,7,8-HxCDD	93		28 - 130	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,4,7,8-HxCDF	91		26 - 152	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,6,7,8-HxCDF	91		26 - 123	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,7,8,9-HxCDF	80		29 - 147	02/15/17 08:22	02/16/17 20:35	1
13C-2,3,4,6,7,8-HxCDF	90		28 - 136	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,4,6,7,8-HpCDD	87		23 - 140	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,4,6,7,8-HpCDF	91		28 - 143	02/15/17 08:22	02/16/17 20:35	1
13C-1,2,3,4,7,8,9-HpCDF	90		26 - 138	02/15/17 08:22	02/16/17 20:35	1
13C-OCDD	91		17 - 157	02/15/17 08:22	02/16/17 20:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	92		35 - 197	02/15/17 08:22	02/16/17 20:35	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000096	0.0000013	ug/L		02/15/17 08:22	02/17/17 19:37	1
Isotope Dilution									
	%Recovery	Qualifier	Limits						
13C-2,3,7,8-TCDF	71		24 - 169						
Surrogate									
	%Recovery	Qualifier	Limits						
37Cl4-2,3,7,8-TCDD	90		35 - 197						

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/20/17 10:20	02/22/17 16:50	1
Copper	1.7	J,DX	2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:50	1
Lead	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:50	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:50	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 17:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	0.19		0.10	0.040	NTU			02/13/17 21:41	1
Total Dissolved Solids	250		10	5.0	mg/L			02/16/17 08:15	1
Total Suspended Solids	ND		1.0	0.50	mg/L			02/17/17 13:10	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:51	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/17/17 20:58	1
Methylene Blue Active Substances	0.098	J,DX	0.10	0.050	mg/L			02/13/17 21:06	1
Biochemical Oxygen Demand	1.4	J,DX	2.0	0.50	mg/L			02/13/17 15:17	1

Client Sample ID: Outfall018_20170212_Comp_F

Lab Sample ID: 440-176654-3

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/20/17 12:28	02/20/17 18:08	1
Copper	1.7	J,DX QP	2.0	0.50	ug/L		02/20/17 12:28	02/20/17 18:08	1
Lead	ND	QP	1.0	0.50	ug/L		02/20/17 12:28	02/20/17 18:08	1
Selenium	ND	QP	2.0	0.50	ug/L		02/20/17 12:28	02/20/17 18:08	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		02/23/17 22:23	02/24/17 22:41	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			950 mL	2.0 mL	387990	02/14/17 07:16	BMN	TAL IRV
Total/NA	Analysis	625		1			388775	02/16/17 22:38	DF	TAL IRV
Total/NA	Prep	608			1055 mL	2 mL	387943	02/15/17 06:22	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			388491	02/15/17 21:13	JM	TAL IRV
Total/NA	Analysis	300.0		1			387977	02/13/17 12:11	NTN	TAL IRV
Total/NA	Analysis	300.0		1			387978	02/13/17 12:11	NTN	TAL IRV
Total/NA	Analysis	300.0		5			387978	02/13/17 12:26	NTN	TAL IRV
Total/NA	Analysis	314.0		1			387955	02/13/17 13:02	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			390436	02/24/17 14:12	NN	TAL IRV
Total/NA	Prep	1613B			1044.3 mL	20 uL	150582	02/15/17 08:22	DXD	TAL SAC
Total/NA	Analysis	1613B		1			151020	02/16/17 20:35	ALM	TAL SAC
Total/NA	Prep	1613B	RA		1044.3 mL	20 uL	150582	02/15/17 08:22	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			151375	02/17/17 19:37	SMA	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	389269	02/20/17 10:20	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			389969	02/22/17 16:50	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	388098	02/13/17 22:08	DB	TAL IRV
Total/NA	Analysis	245.1		1			388283	02/14/17 17:22	DB	TAL IRV
Total/NA	Analysis	180.1		1			388093	02/13/17 21:41	ZEM	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	388595	02/16/17 08:15	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	388951	02/17/17 13:10	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	387906	02/13/17 14:37	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			388090	02/13/17 20:51	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	389022	02/17/17 20:58	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	388092	02/13/17 21:06	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			388051	02/13/17 15:17	MMP	TAL IRV

Client Sample ID: Outfall018_20170212_Comp_F

Lab Sample ID: 440-176654-3

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388059	02/13/17 16:03	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	389315	02/20/17 12:28	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			389474	02/20/17 18:08	EN	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	390138	02/23/17 14:29	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	390519	02/23/17 22:23	DB	TAL IRV
Dissolved	Analysis	245.1		1			390526	02/24/17 22:41	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-387990/1-A

Matrix: Water

Analysis Batch: 388775

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 387990

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/13/17 10:50	02/16/17 21:02	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/13/17 10:50	02/16/17 21:02	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/13/17 10:50	02/16/17 21:02	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/13/17 10:50	02/16/17 21:02	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/13/17 10:50	02/16/17 21:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	15	LG	40 - 120	02/13/17 10:50	02/16/17 21:02	1
2-Fluorobiphenyl	17	LG	50 - 120	02/13/17 10:50	02/16/17 21:02	1
2-Fluorophenol	12	LG	30 - 120	02/13/17 10:50	02/16/17 21:02	1
Nitrobenzene-d5	15	LG	45 - 120	02/13/17 10:50	02/16/17 21:02	1
Phenol-d6	12	LG	35 - 120	02/13/17 10:50	02/16/17 21:02	1
Terphenyl-d14	23	LG	37 - 144	02/13/17 10:50	02/16/17 21:02	1

Lab Sample ID: LCS 440-387990/2-A

Matrix: Water

Analysis Batch: 388775

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 387990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,6-Trichlorophenol	10.0	7.241		ug/L		72	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	8.818		ug/L		88	10 - 150
N-Nitrosodimethylamine	10.0	6.028		ug/L		60	26 - 117
Pentachlorophenol	20.0	12.38		ug/L		62	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	76		40 - 120
2-Fluorobiphenyl	75		50 - 120
2-Fluorophenol	52		30 - 120
Nitrobenzene-d5	71		45 - 120
Phenol-d6	65		35 - 120
Terphenyl-d14	83		37 - 144

Lab Sample ID: LCSD 440-387990/3-A

Matrix: Water

Analysis Batch: 388775

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 387990

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,6-Trichlorophenol	10.0	7.780		ug/L		78	37 - 144	7	35
Bis(2-ethylhexyl) phthalate	10.0	8.792		ug/L		88	10 - 150	0	35
N-Nitrosodimethylamine	10.0	7.449		ug/L		74	26 - 117	21	35
Pentachlorophenol	20.0	13.10		ug/L		65	14 - 150	6	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	80		40 - 120
2-Fluorobiphenyl	77		50 - 120
2-Fluorophenol	66		30 - 120
Nitrobenzene-d5	70		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-387990/3-A
Matrix: Water
Analysis Batch: 388775

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387990

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
Phenol-d6	68		35 - 120
Terphenyl-d14	84		37 - 144

Lab Sample ID: 440-176655-H-1-A MS
Matrix: Water
Analysis Batch: 388775

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387990

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
2,4,6-Trichlorophenol	ND		10.5	8.723		ug/L		83	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.5	34.79	EY LM	ug/L		331	10 - 150
N-Nitrosodimethylamine	ND		10.5	7.978		ug/L		76	12 - 123
Pentachlorophenol	ND		21.1	18.64		ug/L		89	14 - 150

Surrogate	MS		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	87		40 - 120
2-Fluorobiphenyl	80		50 - 120
2-Fluorophenol	68		30 - 120
Nitrobenzene-d5	74		45 - 120
Phenol-d6	73		35 - 120
Terphenyl-d14	83		37 - 144

Lab Sample ID: 440-176655-H-1-B MSD
Matrix: Water
Analysis Batch: 388775

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387990

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec. Limits	RPD	
				Result	Qualifier					RPD	Limit
2,4,6-Trichlorophenol	ND		10.2	8.179		ug/L		80	37 - 144	6	30
Bis(2-ethylhexyl) phthalate	ND		10.2	9.829	BA	ug/L		96	10 - 150	112	25
N-Nitrosodimethylamine	ND		10.2	6.774		ug/L		66	12 - 123	16	35
Pentachlorophenol	ND		20.4	17.10		ug/L		84	14 - 150	9	25

Surrogate	MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	83		40 - 120
2-Fluorobiphenyl	79		50 - 120
2-Fluorophenol	60		30 - 120
Nitrobenzene-d5	71		45 - 120
Phenol-d6	67		35 - 120
Terphenyl-d14	86		37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-387943/1-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387943

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		02/14/17 07:49	02/15/17 14:06	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: MB 440-387943/1-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387943

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	86		10 - 150	02/14/17 07:49	02/15/17 14:06	1
DCB Decachlorobiphenyl (Surr)	99		18 - 134	02/14/17 07:49	02/15/17 14:06	1

Lab Sample ID: LCS 440-387943/2-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	87		10 - 150
DCB Decachlorobiphenyl (Surr)	98		18 - 134

Lab Sample ID: LCSD 440-387943/3-A
Matrix: Water
Analysis Batch: 388423

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	88		10 - 150
DCB Decachlorobiphenyl (Surr)	100		18 - 134

Lab Sample ID: 440-176655-J-1-A MSD
Matrix: Water
Analysis Batch: 388491

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387943

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	79		10 - 150
DCB Decachlorobiphenyl (Surr)	89		18 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-387977/5
Matrix: Water
Analysis Batch: 387977

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Nitrate as N	ND		0.11	0.055	mg/L			02/13/17 11:39	1
Nitrite as N	ND		0.15	0.070	mg/L			02/13/17 11:39	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-387977/4

Matrix: Water

Analysis Batch: 387977

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.13	1.11		mg/L		99	90 - 110
Nitrite as N	1.52	1.52		mg/L		100	90 - 110

Lab Sample ID: 440-176655-D-1 MS

Matrix: Water

Analysis Batch: 387977

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.82		1.13	1.96		mg/L		101	80 - 120
Nitrite as N	ND		1.52	1.57		mg/L		103	80 - 120

Lab Sample ID: 440-176655-D-1 MSD

Matrix: Water

Analysis Batch: 387977

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.82		1.13	1.97		mg/L		101	80 - 120	0	20
Nitrite as N	ND		1.52	1.57		mg/L		103	80 - 120	0	20

Lab Sample ID: MB 440-387978/5

Matrix: Water

Analysis Batch: 387978

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/13/17 11:39	1
Sulfate	ND		0.50	0.25	mg/L			02/13/17 11:39	1

Lab Sample ID: LCS 440-387978/4

Matrix: Water

Analysis Batch: 387978

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.87		mg/L		97	90 - 110
Sulfate	5.00	4.99		mg/L		100	90 - 110

Lab Sample ID: 440-176655-D-1 MS

Matrix: Water

Analysis Batch: 387978

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	9.5		5.00	14.9		mg/L		109	80 - 120

Lab Sample ID: 440-176655-D-1 MSD

Matrix: Water

Analysis Batch: 387978

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	9.5		5.00	15.0		mg/L		110	80 - 120	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-387955/5
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/13/17 10:04	1

Lab Sample ID: LCS 440-387955/4
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	21.5		ug/L		86	85 - 115

Lab Sample ID: MRL 440-387955/7
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.70	J,DX	ug/L		93	75 - 125

Lab Sample ID: 440-176655-G-1 MS
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.0		ug/L		108	80 - 120

Lab Sample ID: 440-176655-G-1 MSD
Matrix: Water
Analysis Batch: 387955

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perchlorate	ND		25.0	27.4		ug/L		110	80 - 120	2	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	0.000000635	J,DX q	0.000010	0.00000017	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8-PeCDD	0.00000104	J,DX q	0.000050	0.00000024	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8-PeCDF	0.00000180	J,DX	0.000050	0.00000021	ug/L		02/15/17 08:22	02/16/17 18:17	1
2,3,4,7,8-PeCDF	0.00000146	J,DX q	0.000050	0.00000021	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,4,7,8-HxCDD	0.00000126	J,DX	0.000050	0.00000019	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,6,7,8-HxCDD	0.00000216	J,DX	0.000050	0.00000019	ug/L		02/15/17 08:22	02/16/17 18:17	1
1,2,3,7,8,9-HxCDD	0.00000154	J,DX	0.000050	0.00000015	ug/L		02/15/17 08:22	02/16/17 18:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.00000192	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				7					
1,2,3,6,7,8-HxCDF	0.00000179	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				7					
1,2,3,7,8,9-HxCDF	0.00000162	J,DX q	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				5					
2,3,4,6,7,8-HxCDF	0.00000166	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				6					
1,2,3,4,6,7,8-HpCDD	0.00000242	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				5					
1,2,3,4,6,7,8-HpCDF	0.00000212	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				9					
1,2,3,4,7,8,9-HpCDF	0.00000173	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				4					
OCDD	0.0000105	J,DX	0.00010	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				6					
OCDF	0.00000444	J,DX	0.00010	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				3					
Total TCDD	0.000000635	J,DX q	0.000010	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				7					
Total TCDF	0.00000105	J,DX	0.000010	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				3					
Total PeCDD	0.00000104	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				4					
Total PeCDF	0.00000326	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				1					
Total HxCDD	0.00000495	J,DX	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				8					
Total HxCDF	0.00000700	J,DX q	0.000050	0.0000001	ug/L		02/15/17 08:22	02/16/17 18:17	1
				6					
Total HpCDD	0.00000376	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				5					
Total HpCDF	0.00000385	J,DX q	0.000050	0.0000002	ug/L		02/15/17 08:22	02/16/17 18:17	1
				1					

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	60		25 - 164	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,7,8-TCDF	58		24 - 169	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8-PeCDD	64		25 - 181	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8-PeCDF	56		24 - 185	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,4,7,8-PeCDF	65		21 - 178	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8-HxCDD	63		32 - 141	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,6,7,8-HxCDD	68		28 - 130	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8-HxCDF	63		26 - 152	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,7,8,9-HxCDF	58		29 - 147	02/15/17 08:22	02/16/17 18:17	1
13C-2,3,4,6,7,8-HxCDF	62		28 - 136	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,6,7,8-HpCDD	62		23 - 140	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,6,7,8-HpCDF	64		28 - 143	02/15/17 08:22	02/16/17 18:17	1
13C-1,2,3,4,7,8,9-HpCDF	62		26 - 138	02/15/17 08:22	02/16/17 18:17	1
13C-OCDD	63		17 - 157	02/15/17 08:22	02/16/17 18:17	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Surrogate	MB MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery Qualifier				
37Cl4-2,3,7,8-TCDD	90	35 - 197	02/15/17 08:22	02/16/17 18:17	1

Lab Sample ID: LCS 320-150582/2-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 150582

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,7,8-TCDD	0.000200	0.000214	MB	ug/L		107	67 - 158
2,3,7,8-TCDF	0.000200	0.000232	MB	ug/L		116	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00109	MB	ug/L		109	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00118	MB	ug/L		118	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.00109	MB	ug/L		109	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00109	MB	ug/L		109	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00112	MB	ug/L		112	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.00103	MB	ug/L		103	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00108	MB	ug/L		108	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00112	MB	ug/L		112	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00114	MB	ug/L		114	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00116	MB	ug/L		116	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00108	MB	ug/L		108	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00112	MB	ug/L		112	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00104	MB	ug/L		104	78 - 138
OCDD	0.00200	0.00200	MB	ug/L		100	78 - 144
OCDF	0.00200	0.00213	MB	ug/L		106	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	62		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	68		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	68		13 - 328
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202
13C-1,2,3,6,7,8-HxCDF	66		21 - 159
13C-1,2,3,7,8,9-HxCDF	60		17 - 205
13C-2,3,4,6,7,8-HxCDF	65		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	64		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	86		31 - 191

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-150582/3-A
Matrix: Water
Analysis Batch: 151020

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 150582

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,3,7,8-TCDD	0.000200	0.000216	MB	ug/L		108	67 - 158	1	50
2,3,7,8-TCDF	0.000200	0.000228	MB	ug/L		114	75 - 158	2	50
1,2,3,7,8-PeCDD	0.00100	0.00104	MB	ug/L		104	70 - 142	5	50
1,2,3,7,8-PeCDF	0.00100	0.00107	MB	ug/L		107	80 - 134	10	50
2,3,4,7,8-PeCDF	0.00100	0.00104	MB	ug/L		104	68 - 160	5	50
1,2,3,4,7,8-HxCDD	0.00100	0.000922	MB	ug/L		92	70 - 164	17	50
1,2,3,6,7,8-HxCDD	0.00100	0.000969	MB	ug/L		97	76 - 134	15	50
1,2,3,7,8,9-HxCDD	0.00100	0.000827	MB	ug/L		83	64 - 162	22	50
1,2,3,4,7,8-HxCDF	0.00100	0.000951	MB	ug/L		95	72 - 134	13	50
1,2,3,6,7,8-HxCDF	0.00100	0.000989	MB	ug/L		99	84 - 130	12	50
1,2,3,7,8,9-HxCDF	0.00100	0.00101	MB	ug/L		101	78 - 130	12	50
2,3,4,6,7,8-HxCDF	0.00100	0.000992	MB	ug/L		99	70 - 156	15	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000903	MB	ug/L		90	70 - 140	18	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000934	MB	ug/L		93	82 - 122	18	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000875	MB	ug/L		88	78 - 138	17	50
OCDD	0.00200	0.00175	MB	ug/L		88	78 - 144	13	50
OCDF	0.00200	0.00189	MB	ug/L		94	63 - 170	12	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C-2,3,7,8-TCDD	59		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	65		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	66		13 - 328
13C-1,2,3,4,7,8-HxCDD	66		21 - 193
13C-1,2,3,6,7,8-HxCDD	73		25 - 163
13C-1,2,3,4,7,8-HxCDF	63		19 - 202
13C-1,2,3,6,7,8-HxCDF	65		21 - 159
13C-1,2,3,7,8,9-HxCDF	58		17 - 205
13C-2,3,4,6,7,8-HxCDF	66		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	63		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	64		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	64		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
37Cl4-2,3,7,8-TCDD	88		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-150582/1-A
Matrix: Water
Analysis Batch: 151375

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 150582

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000015	ug/L		02/15/17 08:22	02/17/17 18:59	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

<i>Isotope Dilution</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>%Recovery</i>	<i>Qualifier</i>					
13C-2,3,7,8-TCDF - RA	57		24 - 169	02/15/17 08:22	02/17/17 18:59	1

<i>Surrogate</i>	<i>MB</i>	<i>MB</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>%Recovery</i>	<i>Qualifier</i>					
37Cl4-2,3,7,8-TCDD - RA	86		35 - 197	02/15/17 08:22	02/17/17 18:59	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
Cadmium	ND		1.0	0.25	ug/L		02/20/17 10:20	02/22/17 16:37	1
Copper	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Lead	ND		1.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 10:20	02/22/17 16:37	1

Lab Sample ID: LCS 440-389269/2-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389269

<i>Analyte</i>	<i>Spike</i>	<i>LCS</i>	<i>LCS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>Limits</i>
	<i>Added</i>	<i>Result</i>	<i>Qualifier</i>					
Cadmium	80.0	79.5		ug/L		99		85 - 115
Copper	80.0	81.6		ug/L		102		85 - 115
Lead	80.0	79.0		ug/L		99		85 - 115
Selenium	80.0	81.9		ug/L		102		85 - 115

Lab Sample ID: 440-176655-A-1-E MS
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 389269

<i>Analyte</i>	<i>Sample</i>	<i>Sample</i>	<i>Spike</i>	<i>MS</i>	<i>MS</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>Limits</i>
	<i>Result</i>	<i>Qualifier</i>	<i>Added</i>	<i>Result</i>	<i>Qualifier</i>					
Cadmium	ND		80.0	79.8		ug/L		100		70 - 130
Copper	1.7	J,DX	80.0	80.3		ug/L		98		70 - 130
Lead	ND		80.0	78.1		ug/L		98		70 - 130
Selenium	ND		80.0	80.7		ug/L		101		70 - 130

Lab Sample ID: 440-176655-A-1-F MSD
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 389269

<i>Analyte</i>	<i>Sample</i>	<i>Sample</i>	<i>Spike</i>	<i>MSD</i>	<i>MSD</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec.</i>	<i>Limits</i>	<i>RPD</i>	<i>Limit</i>
	<i>Result</i>	<i>Qualifier</i>	<i>Added</i>	<i>Result</i>	<i>Qualifier</i>							
Cadmium	ND		80.0	78.7		ug/L		98		70 - 130	1	20
Copper	1.7	J,DX	80.0	79.6		ug/L		97		70 - 130	1	20
Lead	ND		80.0	75.3		ug/L		94		70 - 130	4	20
Selenium	ND		80.0	79.0		ug/L		99		70 - 130	2	20

Lab Sample ID: MB 440-388059/1-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389315

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
Cadmium	ND		1.0	0.25	ug/L		02/20/17 12:28	02/20/17 17:54	1
Copper	ND		2.0	0.50	ug/L		02/20/17 12:28	02/20/17 17:54	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-388059/1-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389315

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.0	0.50	ug/L		02/20/17 12:28	02/20/17 17:54	1
Selenium	ND		2.0	0.50	ug/L		02/20/17 12:28	02/20/17 17:54	1

Lab Sample ID: LCS 440-388059/2-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	73.7		ug/L		92	85 - 115
Copper	80.0	73.9		ug/L		92	85 - 115
Lead	80.0	75.3		ug/L		94	85 - 115
Selenium	80.0	77.5		ug/L		97	85 - 115

Lab Sample ID: 440-176655-A-3-J MS
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	75.2		ug/L		94	70 - 130
Copper	1.7	J,DX	80.0	76.2		ug/L		93	70 - 130
Lead	ND		80.0	75.3		ug/L		94	70 - 130
Selenium	ND		80.0	78.3		ug/L		98	70 - 130

Lab Sample ID: 440-176655-A-3-K MSD
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	76.7		ug/L		96	70 - 130	2	20
Copper	1.7	J,DX	80.0	77.8		ug/L		95	70 - 130	2	20
Lead	ND		80.0	76.4		ug/L		95	70 - 130	1	20
Selenium	ND		80.0	80.2		ug/L		100	70 - 130	2	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-388098/1-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 388098

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/13/17 22:08	02/14/17 16:36	1

Lab Sample ID: LCS 440-388098/2-A
Matrix: Water
Analysis Batch: 388283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 388098

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.73		ug/L		97	85 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-176655-A-1-B MS
 Matrix: Water
 Analysis Batch: 388283

Client Sample ID: Matrix Spike
 Prep Type: Total/NA
 Prep Batch: 388098

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	7.79		ug/L		97	70 - 130

Lab Sample ID: 440-176655-A-1-C MSD
 Matrix: Water
 Analysis Batch: 388283

Client Sample ID: Matrix Spike Duplicate
 Prep Type: Total/NA
 Prep Batch: 388098

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	7.73		ug/L		97	70 - 130	1	20

Lab Sample ID: MB 440-390138/1-E
 Matrix: Water
 Analysis Batch: 390526

Client Sample ID: Method Blank
 Prep Type: Dissolved
 Prep Batch: 390519

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/23/17 22:23	02/24/17 22:35	1

Lab Sample ID: LCS 440-390138/2-E
 Matrix: Water
 Analysis Batch: 390526

Client Sample ID: Lab Control Sample
 Prep Type: Dissolved
 Prep Batch: 390519

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.78		ug/L		97	85 - 115

Lab Sample ID: 440-176654-3 MS
 Matrix: Water
 Analysis Batch: 390526

Client Sample ID: Outfall018_20170212_Comp_F
 Prep Type: Dissolved
 Prep Batch: 390519

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND	QP	8.00	7.79		ug/L		97	70 - 130

Lab Sample ID: 440-176654-3 MSD
 Matrix: Water
 Analysis Batch: 390526

Client Sample ID: Outfall018_20170212_Comp_F
 Prep Type: Dissolved
 Prep Batch: 390519

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND	QP	8.00	7.83		ug/L		98	70 - 130	1	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-388093/5
 Matrix: Water
 Analysis Batch: 388093

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/13/17 21:41	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 180.1 - Turbidity, Nephelometric (Continued)

Lab Sample ID: 440-176654-1 DU
Matrix: Water
Analysis Batch: 388093

Client Sample ID: Outfall018_20170212_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	0.19		0.180		NTU		5	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-388595/1
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/16/17 08:15	1

Lab Sample ID: LCS 440-388595/2
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	964		mg/L		96	90 - 110

Lab Sample ID: 440-176891-A-44 DU
Matrix: Water
Analysis Batch: 388595

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	4700		4770		mg/L		0.6	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-388951/1
Matrix: Water
Analysis Batch: 388951

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/17/17 13:10	1

Lab Sample ID: LCS 440-388951/2
Matrix: Water
Analysis Batch: 388951

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	974		mg/L		97	85 - 115

Lab Sample ID: 440-176826-A-1 DU
Matrix: Water
Analysis Batch: 388951

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	670		650		mg/L		3	10

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-387906/1-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387906

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/13/17 14:37	02/13/17 20:50	1

Lab Sample ID: LCS 440-387906/2-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	96.9		ug/L		97	90 - 110

Lab Sample ID: LCSD 440-387906/3-A
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	96.8		ug/L		97	90 - 110	0	10

Lab Sample ID: 440-176655-K-1-B MSD
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	99.7		ug/L		100	70 - 115	2	15

Lab Sample ID: 440-176655-K-1-C MS
Matrix: Water
Analysis Batch: 388090

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 387906

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	97.9		ug/L		98	70 - 115

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-389022/10
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/17/17 18:12	1

Lab Sample ID: LCS 440-389022/11
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	4.830		mg/L		97	90 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: MRL 440-389022/9
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2000		mg/L		100	10 - 200

Lab Sample ID: 440-176655-J-1 MS
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.240		mg/L		105	90 - 110

Lab Sample ID: 440-176655-J-1 MSD
Matrix: Water
Analysis Batch: 389022

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.020		mg/L		100	90 - 110	4	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-388092/3
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/13/17 21:06	1

Lab Sample ID: LCS 440-388092/4
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.237		mg/L		95	90 - 110

Lab Sample ID: 440-176655-B-1 MSD
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.065	J,DX	0.250	0.312		mg/L		99	50 - 125	4	20

Lab Sample ID: 440-176655-E-1 MS
Matrix: Water
Analysis Batch: 388092

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.065	J,DX	0.250	0.323		mg/L		103	50 - 125

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-388051/1
 Matrix: Water
 Analysis Batch: 388051

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/13/17 15:17	1

Lab Sample ID: LCS 440-388051/4
 Matrix: Water
 Analysis Batch: 388051

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	195		mg/L		98	85 - 115

Lab Sample ID: LCSD 440-388051/5
 Matrix: Water
 Analysis Batch: 388051

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	197		mg/L		99	85 - 115	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

GC/MS Semi VOA

Prep Batch: 387990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	625	
MB 440-387990/1-A	Method Blank	Total/NA	Water	625	
LCS 440-387990/2-A	Lab Control Sample	Total/NA	Water	625	
LCS D 440-387990/3-A	Lab Control Sample Dup	Total/NA	Water	625	
440-176655-H-1-A MS	Matrix Spike	Total/NA	Water	625	
440-176655-H-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 388775

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	625	387990
MB 440-387990/1-A	Method Blank	Total/NA	Water	625	387990
LCS 440-387990/2-A	Lab Control Sample	Total/NA	Water	625	387990
LCS D 440-387990/3-A	Lab Control Sample Dup	Total/NA	Water	625	387990
440-176655-H-1-A MS	Matrix Spike	Total/NA	Water	625	387990
440-176655-H-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	387990

GC Semi VOA

Prep Batch: 387943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	608	
MB 440-387943/1-A	Method Blank	Total/NA	Water	608	
LCS 440-387943/2-A	Lab Control Sample	Total/NA	Water	608	
LCS D 440-387943/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-176655-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	

Analysis Batch: 388423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-387943/1-A	Method Blank	Total/NA	Water	608 Pesticides	387943
LCS 440-387943/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	387943
LCS D 440-387943/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	387943

Analysis Batch: 388491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	608 Pesticides	387943
440-176655-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	387943

HPLC/IC

Analysis Batch: 387955

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	314.0	
MB 440-387955/5	Method Blank	Total/NA	Water	314.0	
LCS 440-387955/4	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-387955/7	Lab Control Sample	Total/NA	Water	314.0	
440-176655-G-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-176655-G-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

HPLC/IC (Continued)

Analysis Batch: 387977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	300.0	
MB 440-387977/5	Method Blank	Total/NA	Water	300.0	
LCS 440-387977/4	Lab Control Sample	Total/NA	Water	300.0	
440-176655-D-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-176655-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 387978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	300.0	
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	300.0	
MB 440-387978/5	Method Blank	Total/NA	Water	300.0	
LCS 440-387978/4	Lab Control Sample	Total/NA	Water	300.0	
440-176655-D-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-176655-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 390436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 150582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	1613B	
440-176654-1 - RA	Outfall018_20170212_Comp	Total/NA	Water	1613B	
MB 320-150582/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-150582/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-150582/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-150582/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 151020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	1613B	150582
MB 320-150582/1-A	Method Blank	Total/NA	Water	1613B	150582
LCS 320-150582/2-A	Lab Control Sample	Total/NA	Water	1613B	150582
LCSD 320-150582/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	150582

Analysis Batch: 151375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1 - RA	Outfall018_20170212_Comp	Total/NA	Water	1613B	150582
MB 320-150582/1-A - RA	Method Blank	Total/NA	Water	1613B	150582

Metals

Filtration Batch: 388059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388059/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-176655-A-3-J MS	Matrix Spike	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Metals (Continued)

Filtration Batch: 388059 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-A-3-K MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 388098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	245.1	
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 388283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	245.1	388098
MB 440-388098/1-A	Method Blank	Total/NA	Water	245.1	388098
LCS 440-388098/2-A	Lab Control Sample	Total/NA	Water	245.1	388098
440-176655-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	388098
440-176655-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	388098

Prep Batch: 389269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total Recoverable	Water	200.2	
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 389315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	200.2	388059
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.2	388059
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.2	388059
440-176655-A-3-J MS	Matrix Spike	Dissolved	Water	200.2	388059
440-176655-A-3-K MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	388059

Analysis Batch: 389474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	200.8	389315
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.8	389315
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.8	389315
440-176655-A-3-J MS	Matrix Spike	Dissolved	Water	200.8	389315
440-176655-A-3-K MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	389315

Analysis Batch: 389969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total Recoverable	Water	200.8	389269
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.8	389269
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389269
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	389269
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	389269

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Metals (Continued)

Filtration Batch: 390138

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-390138/1-E	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-390138/2-E	Lab Control Sample	Dissolved	Water	FILTRATION	
440-176654-3 MS	Outfall018_20170212_Comp_F	Dissolved	Water	FILTRATION	
440-176654-3 MSD	Outfall018_20170212_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 390519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	245.1	390138
MB 440-390138/1-E	Method Blank	Dissolved	Water	245.1	390138
LCS 440-390138/2-E	Lab Control Sample	Dissolved	Water	245.1	390138
440-176654-3 MS	Outfall018_20170212_Comp_F	Dissolved	Water	245.1	390138
440-176654-3 MSD	Outfall018_20170212_Comp_F	Dissolved	Water	245.1	390138

Analysis Batch: 390526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	245.1	390519
MB 440-390138/1-E	Method Blank	Dissolved	Water	245.1	390519
LCS 440-390138/2-E	Lab Control Sample	Dissolved	Water	245.1	390519
440-176654-3 MS	Outfall018_20170212_Comp_F	Dissolved	Water	245.1	390519
440-176654-3 MSD	Outfall018_20170212_Comp_F	Dissolved	Water	245.1	390519

General Chemistry

Prep Batch: 387906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	Distill/CN	
MB 440-387906/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	Distill/CN	

Analysis Batch: 388051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	SM5210B	
USB 440-388051/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-388051/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-388051/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 388090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	SM 4500 CN E	387906
MB 440-387906/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	387906
LCS 440-387906/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	387906
LCSD 440-387906/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	387906
440-176655-K-1-C MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	387906

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

General Chemistry (Continued)

Analysis Batch: 388092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	SM 5540C	
MB 440-388092/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-388092/4	Lab Control Sample	Total/NA	Water	SM 5540C	
440-176655-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	
440-176655-E-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	

Analysis Batch: 388093

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	180.1	
MB 440-388093/5	Method Blank	Total/NA	Water	180.1	
440-176654-1 DU	Outfall018_20170212_Comp	Total/NA	Water	180.1	

Analysis Batch: 388595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	SM 2540C	
MB 440-388595/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-388595/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-176891-A-44 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 388951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	SM 2540D	
MB 440-388951/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-388951/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-176826-A-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 389022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-389022/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-389022/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-389022/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-176655-J-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-176655-J-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
EY	Result exceeds normal dynamic range; reported as a min. est.
LM	MS and/or MSD above acceptance limits. See Blank Spike (LCS)
BA	Relative percent difference out of control
LG	LG=Surrogate recovery below the acceptance limits

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
608 Pesticides	608	Water	alpha-BHC
625	625	Water	2,4,6-Trichlorophenol
625	625	Water	2,4-Dinitrotoluene
625	625	Water	Bis(2-ethylhexyl) phthalate
625	625	Water	N-Nitrosodimethylamine
625	625	Water	Pentachlorophenol
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176654-1

Login Number: 176654

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176654-1

Login Number: 176654
List Number: 3
Creator: Edman, Connor M

List Source: TestAmerica Sacramento
List Creation: 02/14/17 12:28 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-176654-1	Outfall018_20170212_Comp		74		72		84		76
440-176654-1 - RA	Outfall018_20170212_Comp				71				
MB 320-150582/1-A	Method Blank		60		58		64		56
MB 320-150582/1-A - RA	Method Blank				57				

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-176654-1	Outfall018_20170212_Comp		88		91		93		91
440-176654-1 - RA	Outfall018_20170212_Comp								
MB 320-150582/1-A	Method Blank		65		63		68		63
MB 320-150582/1-A - RA	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-176654-1	Outfall018_20170212_Comp		91		80		90	87	
440-176654-1 - RA	Outfall018_20170212_Comp								
MB 320-150582/1-A	Method Blank		64		58		62	62	
MB 320-150582/1-A - RA	Method Blank								

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)		
440-176654-1	Outfall018_20170212_Comp		91		90		91		
440-176654-1 - RA	Outfall018_20170212_Comp								
MB 320-150582/1-A	Method Blank		64		62		63		
MB 320-150582/1-A - RA	Method Blank								

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-150582/2-A	Lab Control Sample	62	59	68	59	68	65	71	64
LCS 320-150582/3-A	Lab Control Sample Dup	59	59	65	59	66	66	73	63

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-150582/2-A	Lab Control Sample	66	60	65	63	64	64	64
LCS 320-150582/3-A	Lab Control Sample Dup	65	58	66	63	64	64	64

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176654-2

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/14/2017 11:33:41 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/14/2017 11:33:41 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176654-1	Outfall018_20170212_Comp	Water	02/12/17 07:40	02/12/17 13:46

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Job ID: 440-176654-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176654-2

Comments

No additional comments.

Receipt

The samples were received on 2/12/2017 1:46 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.4° C and 1.1° C.

RAD

Method(s) 901.1: Gamma Prep Batch: 160-292601

The sample duplicate had an MDC of 20.9 with a requested limit (RL) of 20.0 pCi/L for Cs-137. The calculated result (-9.253 pCi/L) is well below the RL and the replicate error ratio is 0.55 with a limit of 1. The reproducibility is valid and the sample results are not believed to be affected by this statistical anomaly. The data is provided with this narrative.

(440-176654-Q-1-B DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-0.588	U	0.774	0.777	3.00	1.79	pCi/L	03/07/17 05:12	03/11/17 10:58	1
Gross Beta	1.64		0.629	0.650	4.00	0.865	pCi/L	03/07/17 05:12	03/11/17 10:58	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.41	U	7.20	7.20	20.0	12.8	pCi/L	02/15/17 13:15	02/15/17 15:38	1
Potassium-40	8.39	U	103	103		191	pCi/L	02/15/17 13:15	02/15/17 15:38	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0613	U	0.0938	0.0940	1.00	0.162	pCi/L	02/16/17 10:06	03/10/17 06:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110					02/16/17 10:06	03/10/17 06:12	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0834	U	0.281	0.281	1.00	0.485	pCi/L	02/16/17 14:27	03/07/17 14:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110					02/16/17 14:27	03/07/17 14:30	1
Y Carrier	81.1		40 - 110					02/16/17 14:27	03/07/17 14:30	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0240	U	0.144	0.144	3.00	0.263	pCi/L	02/16/17 09:55	02/27/17 11:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.6		40 - 110					02/16/17 09:55	02/27/17 11:44	1
Y Carrier	95.3		40 - 110					02/16/17 09:55	02/27/17 11:44	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-41.9	U	161	161	500	298	pCi/L	03/11/17 07:33	03/12/17 22:47	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.0338	U	0.07439	0.07454	1.00	0.125	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	108		30 - 110					02/21/17 13:19	02/24/17 17:20	1



Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	296211	03/07/17 05:12	MRB	TAL SL
Total/NA	Analysis	900.0		1			297297	03/11/17 10:58	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	292601	02/15/17 13:15	R1S	TAL SL
Total/NA	Analysis	901.1		1			292645	02/15/17 15:38	CDR	TAL SL
Total/NA	Prep	PrecSep-21			1000.27 mL	1.0 g	292779	02/16/17 10:06	PJM	TAL SL
Total/NA	Analysis	903.0		1			296972	03/10/17 06:12	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.27 mL	1.0 g	292818	02/16/17 14:27	PJM	TAL SL
Total/NA	Analysis	904.0		1			296226	03/07/17 14:30	MLK	TAL SL
Total/NA	Prep	PrecSep-7			1001.44 mL	1.0 g	292776	02/16/17 09:55	BME	TAL SL
Total/NA	Analysis	905		1			294479	02/27/17 11:44	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.1 mL	1.0 g	297295	03/11/17 07:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			297465	03/12/17 22:47	RTM	TAL SL
Total/NA	Prep	ExtChrom			500.04 mL	1.0 mL	293712	02/21/17 13:19	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			294632	02/24/17 17:20	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-296211/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296211

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	-0.2155	U	0.420	0.421	3.00	0.938	pCi/L	03/07/17 05:12	03/11/17 10:57	1
Gross Beta	0.07748	U	0.474	0.474	4.00	0.846	pCi/L	03/07/17 05:12	03/11/17 10:57	1

Lab Sample ID: LCS 160-296211/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	39.52		5.98	3.00	2.10	pCi/L	79	73 - 133

Lab Sample ID: LCSB 160-296211/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.0	91.75		9.70	4.00	0.983	pCi/L	101	75 - 125

Lab Sample ID: 440-176655-L-1-E MS
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	0.113	U	49.9	30.60		4.92	3.00	1.86	pCi/L	61	60 - 140

Lab Sample ID: 440-176655-L-1-F MSD
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	0.113	U	49.9	31.37		5.11	3.00	2.23	pCi/L	63	60 - 140	0.08	1

Lab Sample ID: 440-176655-L-1-G MSBT
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	3.42		91.0	92.37		9.77	4.00	1.08	pCi/L	98	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-176655-L-1-H MSBTD
Matrix: Water
Analysis Batch: 297296

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296211

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	3.42		91.0	92.24		9.76	4.00	1.09	pCi/L	98	60 - 140	0.01	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-292601/1-A
Matrix: Water
Analysis Batch: 292642

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292601

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-2.043	U	10.7	10.7	20.0	18.6	pCi/L	02/15/17 13:15	02/15/17 15:37	1
Potassium-40	-29.64	U	98.0	98.0		148	pCi/L	02/15/17 13:15	02/15/17 15:37	1

Lab Sample ID: LCS 160-292601/2-A
Matrix: Water
Analysis Batch: 292644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292601

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132500		15300		435	pCi/L	97	90 - 111
Cesium-137	47000	46370		4650	20.0	157	pCi/L	99	90 - 111
Cobalt-60	39800	38420		3800		83.8	pCi/L	97	89 - 110

Lab Sample ID: 440-176654-1 DU
Matrix: Water
Analysis Batch: 292647

Client Sample ID: Outfall018_20170212_Comp
Prep Type: Total/NA
Prep Batch: 292601

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	2.41	U	-9.253	U G	14.1	20.0	20.9	pCi/L	0.55	1
Potassium-40	8.39	U	14.59	U	83.3		145	pCi/L	0.03	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-292779/1-A
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292779

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01710	U	0.0996	0.0997	1.00	0.207	pCi/L	02/16/17 10:06	03/10/17 06:08	1
Carrier	%Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110					02/16/17 10:06	03/10/17 06:08	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-292779/2-A
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.3	11.12		1.25	1.00	0.194	pCi/L	99	68 - 137	
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	87.6		40 - 110							

Lab Sample ID: 440-176655-Q-1-C MS
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.00707	U	11.3	11.65		1.30	1.00	0.169	pCi/L	103	75 - 138
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	87.3		40 - 110								

Lab Sample ID: 440-176655-Q-1-D MSD
Matrix: Water
Analysis Batch: 296973

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.00707	U	11.2	9.978		1.13	1.00	0.201	pCi/L	89	75 - 138	0.69	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	87.6		40 - 110										

Lab Sample ID: 180-63329-A-7-A DU
Matrix: Water
Analysis Batch: 296972

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292779

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.744		0.7010		0.216	1.00	0.180	pCi/L	0.1	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	84.7		40 - 110							

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-292818/1-A
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292818

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.09113	U	0.238	0.238	1.00	0.411	pCi/L	02/16/17 14:27	03/07/17 14:26	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.7		40 - 110					02/16/17 14:27	03/07/17 14:26	1
Y Carrier	90.1		40 - 110					02/16/17 14:27	03/07/17 14:26	1

Lab Sample ID: LCS 160-292818/2-A
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.8	14.93		1.62	1.00	0.398	pCi/L	109	56 - 140
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	87.6		40 - 110						
Y Carrier	86.4		40 - 110						

Lab Sample ID: 440-176655-Q-1-I MS
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.0865	U	13.8	15.26		1.65	1.00	0.457	pCi/L	111	45 - 150
Carrier	MS %Yield	MS Qualifier	Limits								
Ba Carrier	87.3		40 - 110								
Y Carrier	88.2		40 - 110								

Lab Sample ID: 440-176655-Q-1-J MSD
Matrix: Water
Analysis Batch: 296226

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.0865	U	13.7	13.87		1.52	1.00	0.417	pCi/L	101	45 - 150	0.44	1
Carrier	MSD %Yield	MSD Qualifier	Limits										
Ba Carrier	87.6		40 - 110										
Y Carrier	87.1		40 - 110										

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 180-63329-A-7-B DU
Matrix: Water
Analysis Batch: 296225

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 292818

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.365	U	0.1016	U	0.244	1.00	0.419	pCi/L	0.53	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	84.7		40 - 110							
Y Carrier	88.6		40 - 110							

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-292776/1-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292776

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.07316	U	0.188	0.188	3.00	0.322	pCi/L	02/16/17 09:55	02/27/17 11:11	1
Carrier	%Yield	Qualifier	Limits				Prepared		Analyzed	Dil Fac
Sr Carrier	82.7		40 - 110				02/16/17 09:55		02/27/17 11:11	1
Y Carrier	95.0		40 - 110				02/16/17 09:55		02/27/17 11:11	1

Lab Sample ID: LCS 160-292776/2-A
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.50	8.847		0.916	3.00	0.351	pCi/L	104	75 - 125
Carrier	%Yield	Qualifier	Limits						
Sr Carrier	81.4		40 - 110						
Y Carrier	92.7		40 - 110						

Lab Sample ID: 440-176655-Q-1-F MS
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.0146	U	8.50	8.744		0.942	3.00	0.350	pCi/L	103	19 - 150
Carrier	%Yield	Qualifier	Limits								
Sr Carrier	65.6		40 - 110								
Y Carrier	92.7		40 - 110								

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-176655-Q-1-G MSD
Matrix: Water
Analysis Batch: 294480

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 292776

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.0146	U	8.50	9.105		0.939	3.00	0.287	pCi/L	107	19 - 150	0.19	1
Carrier	%Yield	MSD Qualifier	MSD Limits										
Sr Carrier	78.2		40 - 110										
Y Carrier	91.6		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-297295/1-A
Matrix: Water
Analysis Batch: 297465

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297295

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	41.44	U	171	171	500	301	pCi/L	03/11/17 07:33	03/12/17 20:22	1

Lab Sample ID: LCS 160-297295/2-A
Matrix: Water
Analysis Batch: 297465

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297295

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2802		435	500	301	pCi/L	96	74 - 114

Lab Sample ID: 160-21352-A-2-B MS
Matrix: Water
Analysis Batch: 297465

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297295

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	1350		2940	4162		559	500	301	pCi/L	96	67 - 130

Lab Sample ID: 160-21352-A-1-B DU
Matrix: Water
Analysis Batch: 297465

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 297295

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Tritium	685		671.2		233	500	295	pCi/L	0.03	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-293712/1-A
Matrix: Water
Analysis Batch: 294615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 293712

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Total Uranium	-0.03632	U	0.07111	0.07118	1.00	0.189	pCi/L	02/21/17 13:19	02/24/17 17:20	1
Tracer	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Uranium-232	91.4		30 - 110			02/21/17 13:19	02/24/17 17:20	1		

Lab Sample ID: LCS 160-293712/2-A
Matrix: Water
Analysis Batch: 294617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	13.0	14.45		1.72	1.00	0.116	pCi/L	111	83 - 121
Tracer	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
	%Yield	Qualifier							
Uranium-232	85.9		30 - 110						

Lab Sample ID: 440-175633-L-1-E MS
Matrix: Water
Analysis Batch: 294620

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	1.17		13.0	14.40		1.68	1.00	0.108	pCi/L	102	68 - 143
Tracer	MS MS		Limits			Prepared	Analyzed	Dil Fac			
	%Yield	Qualifier									
Uranium-232	88.1		30 - 110								

Lab Sample ID: 440-175633-L-1-F MSD
Matrix: Water
Analysis Batch: 294621

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-238	1.17		13.0	13.04		1.55	1.00	0.104	pCi/L	91	68 - 143	0.42	1
Tracer	MSD MSD		Limits			Prepared	Analyzed	Dil Fac					
	%Yield	Qualifier											
Uranium-232	87.1		30 - 110										

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-175840-G-1-G MS
Matrix: Water
Analysis Batch: 294624

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Added	Result								
Uranium-234	0.147	U	12.7	12.44		1.49	1.00	0.168	pCi/L	98	65 - 146		
Uranium-238	0.125	U	13.0	12.90		1.53	1.00	0.118	pCi/L	99	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	96.2		30 - 110										

Lab Sample ID: 440-175840-G-1-H MSD
Matrix: Water
Analysis Batch: 294625

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
	Result	Qual		Added	Result								
Uranium-234	0.147	U	12.7	12.78		1.54	1.00	0.123	pCi/L	100	65 - 146	0.11	1
Uranium-238	0.125	U	13.0	14.72		1.71	1.00	0.108	pCi/L	113	68 - 143	0.56	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	82.1		30 - 110										

Lab Sample ID: 440-176655-L-1-B MS
Matrix: Water
Analysis Batch: 294629

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike	MS	MS	Total	RL	MDC	Unit	%Rec	%Rec.		
	Result	Qual		Added	Result								
Uranium-234	0.0822	U	12.7	12.49		1.65	1.00	0.169	pCi/L	98	65 - 146		
Uranium-238	0.104		13.0	15.46		1.92	1.00	0.148	pCi/L	118	68 - 143		
MS MS													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	66.9		30 - 110										

Lab Sample ID: 440-176655-L-1-C MSD
Matrix: Water
Analysis Batch: 294630

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 293712

Analyte	Sample	Sample	Spike	MSD	MSD	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
	Result	Qual		Added	Result								
Uranium-234	0.0822	U	12.7	13.53		1.60	1.00	0.106	pCi/L	106	65 - 146	0.32	1
Uranium-238	0.104		13.0	13.16		1.56	1.00	0.142	pCi/L	100	68 - 143	0.66	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	85.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Rad

Prep Batch: 292601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-292601/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-292601/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-176654-1 DU	Outfall018_20170212_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 292776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	PrecSep-7	
MB 160-292776/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-292776/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-176655-Q-1-F MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-176655-Q-1-G MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 292779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	PrecSep-21	
MB 160-292779/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-292779/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-176655-Q-1-C MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-176655-Q-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	
180-63329-A-7-A DU	Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 292818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	PrecSep_0	
MB 160-292818/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-292818/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-176655-Q-1-I MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-176655-Q-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	
180-63329-A-7-B DU	Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 293712

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	ExtChrom	
MB 160-293712/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-293712/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-175633-L-1-E MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175633-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-175840-G-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-175840-G-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-176655-L-1-B MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-176655-L-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 296211

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	Evaporation	
MB 160-296211/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-296211/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-296211/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-176655-L-1-E MS	Matrix Spike	Total/NA	Water	Evaporation	
440-176655-L-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Rad (Continued)

Prep Batch: 296211 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176655-L-1-G MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-176655-L-1-H MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 297295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-297295/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-297295/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
160-21352-A-2-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
160-21352-A-1-B DU	Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176654-2

Login Number: 176654

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176654-2

Login Number: 176654

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 02/14/17 12:52 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.0,2.5,1.2,0.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
180-63329-A-7-A DU	Duplicate	84.7
440-176654-1	Outfall018_20170212_Comp	95.3
440-176655-Q-1-C MS	Matrix Spike	87.3
440-176655-Q-1-D MSD	Matrix Spike Duplicate	87.6
LCS 160-292779/2-A	Lab Control Sample	87.6
MB 160-292779/1-A	Method Blank	84.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
180-63329-A-7-B DU	Duplicate	84.7	88.6
440-176654-1	Outfall018_20170212_Comp	95.3	81.1
440-176655-Q-1-I MS	Matrix Spike	87.3	88.2
440-176655-Q-1-J MSD	Matrix Spike Duplicate	87.6	87.1
LCS 160-292818/2-A	Lab Control Sample	87.6	86.4
MB 160-292818/1-A	Method Blank	84.7	90.1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-176654-1	Outfall018_20170212_Comp	80.6	95.3
440-176655-Q-1-F MS	Matrix Spike	65.6	92.7
440-176655-Q-1-G MSD	Matrix Spike Duplicate	78.2	91.6
LCS 160-292776/2-A	Lab Control Sample	81.4	92.7
MB 160-292776/1-A	Method Blank	82.7	95.0

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-E MS	Matrix Spike	88.1

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-175633-L-1-F MSD	Matrix Spike Duplicate	87.1
440-175840-G-1-G MS	Matrix Spike	96.2
440-175840-G-1-H MSD	Matrix Spike Duplicate	82.1
440-176654-1	Outfall018_20170212_Comp	108
440-176655-L-1-B MS	Matrix Spike	66.9
440-176655-L-1-C MSD	Matrix Spike Duplicate	85.0
LCS 160-293712/2-A	Lab Control Sample	85.9
MB 160-293712/1-A	Method Blank	91.4

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176654-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 9, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-176654-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170212_ Comp	440-176654-1	N/A	Water	2/12/17 7:40 AM	E200.8
Outfall018_20170212_ Comp_F	440-176654-3	N/A	Water	2/12/17 7:40 AM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176654-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHODS 200.8— METALS

Marcia Hilchey of MEC^x reviewed the SDG on April 9, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for zinc, was met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.



IV.7. FIELD QC SAMPLES

MECX^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MECX^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401766544

Analysis Method *E200.8*

Sample Name Outfall018_20170212_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	U	

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176654-4

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/8/2017 5:54:21 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The
Expert**

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/8/2017 5:54:21 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176654-1	Outfall018_20170212_Comp	Water	02/12/17 07:40	02/12/17 13:46
440-176654-3	Outfall018_20170212_Comp_F	Water	02/12/17 07:40	02/12/17 13:46

- 1
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- 3
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- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Job ID: 440-176654-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176654-4

Comments

No additional comments.

Receipt

The samples were received on 2/12/2017 1:46 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.4° C and 1.1° C.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

- 1
- 2
- 3
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- 10
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- 12
- 13

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/20/17 10:20	02/22/17 16:50	1

Client Sample ID: Outfall018_20170212_Comp_F

Lab Sample ID: 440-176654-3

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		02/20/17 12:28	02/20/17 18:08	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Client Sample ID: Outfall018_20170212_Comp

Lab Sample ID: 440-176654-1

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	389269	02/20/17 10:20	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			389969	02/22/17 16:50	RC	TAL IRV

Client Sample ID: Outfall018_20170212_Comp_F

Lab Sample ID: 440-176654-3

Date Collected: 02/12/17 07:40

Matrix: Water

Date Received: 02/12/17 13:46

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	388059	02/13/17 16:03	EN	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	389315	02/20/17 12:28	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			389474	02/20/17 18:08	EN	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389269/1-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/20/17 10:20	02/22/17 16:37	1

Lab Sample ID: LCS 440-389269/2-A
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	78.4		ug/L		98	85 - 115

Lab Sample ID: 440-176655-A-1-E MS
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	ND		80.0	82.4		ug/L		103	70 - 130

Lab Sample ID: 440-176655-A-1-F MSD
Matrix: Water
Analysis Batch: 389969

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 389269

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	ND		80.0	79.9		ug/L		100	70 - 130	3	20

Lab Sample ID: MB 440-388059/1-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 389315

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/20/17 12:28	02/20/17 17:54	1

Lab Sample ID: LCS 440-388059/2-B
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	74.4		ug/L		93	85 - 115

Lab Sample ID: 440-176655-A-3-J MS
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	ND	QP	80.0	76.1		ug/L		95	70 - 130

Lab Sample ID: 440-176655-A-3-K MSD
Matrix: Water
Analysis Batch: 389474

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 389315

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	ND	QP	80.0	77.4		ug/L		97	70 - 130	2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

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QC Association Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Metals

Filtration Batch: 388059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	FILTRATION	
MB 440-388059/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-176655-A-3-J MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-176655-A-3-K MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 389269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total Recoverable	Water	200.2	
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.2	
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 389315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	200.2	388059
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.2	388059
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.2	388059
440-176655-A-3-J MS	Matrix Spike	Dissolved	Water	200.2	388059
440-176655-A-3-K MSD	Matrix Spike Duplicate	Dissolved	Water	200.2	388059

Analysis Batch: 389474

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-3	Outfall018_20170212_Comp_F	Dissolved	Water	200.8	389315
MB 440-388059/1-B	Method Blank	Dissolved	Water	200.8	389315
LCS 440-388059/2-B	Lab Control Sample	Dissolved	Water	200.8	389315
440-176655-A-3-J MS	Matrix Spike	Dissolved	Water	200.8	389315
440-176655-A-3-K MSD	Matrix Spike Duplicate	Dissolved	Water	200.8	389315

Analysis Batch: 389969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176654-1	Outfall018_20170212_Comp	Total Recoverable	Water	200.8	389269
MB 440-389269/1-A	Method Blank	Total Recoverable	Water	200.8	389269
LCS 440-389269/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389269
440-176655-A-1-E MS	Matrix Spike	Total Recoverable	Water	200.8	389269
440-176655-A-1-F MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	389269

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-176654-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176654-4

Login Number: 176654

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177317-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 28, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-177317-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170217_ Grab	440-177317-1	N/A	Water	2/17/2017 10:30:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177317-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on April 3, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, *EPA Method 624*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water sample was analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170217 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 28, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA Methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

The method blank had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.3.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

No sample raw data was presented in the SDG for specific conductance analysis and no sample results were qualified.

IV.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773171

Analysis Method E120.1

Sample Name Outfall018_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-177317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	510	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall018_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-177317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.5	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall018_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-177317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall018_20170217_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/17/2017 10:30:00 AM Validation Level: 8

Lab Sample Name: 440-177317-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177317-1

Client Project/Site: Routine Outfall 018 Grab

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/23/2017 2:35:56 PM

Urvashi Patel, Manager of Project Management

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urvashi.patel@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/23/2017 2:35:56 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177317-1	Outfall018_20170217_Grab	Water	02/17/17 10:30	02/17/17 19:50
440-177317-3	TB-20170217	Water	02/17/17 10:30	02/17/17 19:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Job ID: 440-177317-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177317-1

Comments

Revised report-Client only needed 3 compounds- 11DCE, 12DCA, TCE. This was missed at login review and final review and incorrect cmpds were reported instead.

Receipt

The samples were received on 2/17/2017 7:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-390730 and analytical batch 440-390827. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Client Sample ID: Outfall018_20170217_Grab

Lab Sample ID: 440-177317-1

Date Collected: 02/17/17 10:30

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 05:04	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 05:04	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 05:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					02/28/17 05:04	1
Dibromofluoromethane (Surr)	106		76 - 132					02/28/17 05:04	1
Toluene-d8 (Surr)	103		80 - 128					02/28/17 05:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.5	1.5	mg/L		02/27/17 09:28	02/27/17 14:48	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	510		1.0	1.0	umhos/cm			02/21/17 10:01	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/18/17 13:49	1

Client Sample ID: TB-20170217

Lab Sample ID: 440-177317-3

Date Collected: 02/17/17 10:30

Matrix: Water

Date Received: 02/17/17 19:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/28/17 05:31	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/28/17 05:31	1
Trichloroethene	ND		0.50	0.25	ug/L			02/28/17 05:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					02/28/17 05:31	1
Dibromofluoromethane (Surr)	106		76 - 132					02/28/17 05:31	1
Toluene-d8 (Surr)	104		80 - 128					02/28/17 05:31	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Client Sample ID: Outfall018_20170217_Grab

Lab Sample ID: 440-177317-1

Date Collected: 02/17/17 10:30

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	390838	02/28/17 05:04	WK	TAL IRV
Total/NA	Analysis	120.1		1			389480	02/21/17 10:01	XL	TAL IRV
Total/NA	Prep	1664A			905 mL	1000 mL	390730	02/27/17 09:28	JSS	TAL IRV
Total/NA	Analysis	1664A		1			390827	02/27/17 14:48	JSS	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	389106	02/18/17 13:49	RB	TAL IRV

Client Sample ID: TB-20170217

Lab Sample ID: 440-177317-3

Date Collected: 02/17/17 10:30

Matrix: Water

Date Received: 02/17/17 19:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	390838	02/28/17 05:31	WK	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-390838/4
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			02/27/17 20:10	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			02/27/17 20:10	1
Trichloroethene	ND		0.50	0.25	ug/L			02/27/17 20:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		02/27/17 20:10	1
Dibromofluoromethane (Surr)	101		76 - 132		02/27/17 20:10	1
Toluene-d8 (Surr)	105		80 - 128		02/27/17 20:10	1

Lab Sample ID: LCS 440-390838/5
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	25.8		ug/L		103	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.7		ug/L		103	63 - 130
1,1,2-Trichloroethane	25.0	25.9		ug/L		104	70 - 130
1,1-Dichloroethane	25.0	26.0		ug/L		104	64 - 130
1,1-Dichloroethene	25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	26.3		ug/L		105	70 - 130
1,2-Dichloroethane	25.0	26.4		ug/L		106	57 - 138
1,2-Dichloropropane	25.0	27.4		ug/L		110	67 - 130
1,3-Dichlorobenzene	25.0	25.8		ug/L		103	70 - 130
1,4-Dichlorobenzene	25.0	25.9		ug/L		103	70 - 130
Benzene	25.0	26.6		ug/L		106	68 - 130
Bromoform	25.0	26.2		ug/L		105	60 - 148
Bromomethane	25.0	22.4		ug/L		90	64 - 139
Carbon tetrachloride	25.0	26.9		ug/L		108	60 - 150
Chlorobenzene	25.0	25.2		ug/L		101	70 - 130
Dibromochloromethane	25.0	25.1		ug/L		100	69 - 145
Chloroethane	25.0	24.6		ug/L		98	64 - 135
Chloroform	25.0	25.2		ug/L		101	70 - 130
Chloromethane	25.0	23.2		ug/L		93	47 - 140
cis-1,3-Dichloropropene	25.0	26.4		ug/L		105	70 - 133
Bromodichloromethane	25.0	27.1		ug/L		109	70 - 132
Ethylbenzene	25.0	24.5		ug/L		98	70 - 130
Methylene Chloride	25.0	23.8		ug/L		95	52 - 130
Tetrachloroethene	25.0	25.2		ug/L		101	70 - 130
Toluene	25.0	24.4		ug/L		98	70 - 130
trans-1,2-Dichloroethene	25.0	27.4		ug/L		110	70 - 130
trans-1,3-Dichloropropene	25.0	25.0		ug/L		100	70 - 132
Vinyl chloride	25.0	21.7		ug/L		87	59 - 133
Trichloroethene	25.0	26.4		ug/L		106	70 - 130
cis-1,2-Dichloroethene	25.0	26.2		ug/L		105	70 - 133
Naphthalene	25.0	24.6		ug/L		98	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-390838/5
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	103		76 - 132
Toluene-d8 (Surr)	99		80 - 128

Lab Sample ID: 440-177200-D-4 MS
Matrix: Water
Analysis Batch: 390838

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
1,1,1-Trichloroethane	ND		25.0	26.3		ug/L		105	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	26.2		ug/L		105	63 - 130
1,1,2-Trichloroethane	ND		25.0	26.3		ug/L		105	70 - 130
1,1-Dichloroethane	ND		25.0	26.2		ug/L		105	65 - 130
1,1-Dichloroethene	ND		25.0	24.1		ug/L		96	70 - 130
1,2-Dichlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130
1,2-Dichloroethane	ND		25.0	27.0		ug/L		108	56 - 146
1,2-Dichloropropane	ND		25.0	27.4		ug/L		110	69 - 130
1,3-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130
1,4-Dichlorobenzene	ND		25.0	26.0		ug/L		104	70 - 130
Benzene	0.44	J,DX	25.0	27.1		ug/L		107	66 - 130
Bromoform	ND		25.0	26.3		ug/L		105	59 - 150
Bromomethane	ND		25.0	22.7		ug/L		91	62 - 131
Carbon tetrachloride	ND		25.0	27.5		ug/L		110	60 - 150
Chlorobenzene	ND		25.0	25.0		ug/L		100	70 - 130
Dibromochloromethane	ND		25.0	25.1		ug/L		100	70 - 148
Chloroethane	ND		25.0	25.3		ug/L		101	68 - 130
Chloroform	ND		25.0	25.7		ug/L		103	70 - 130
Chloromethane	ND		25.0	23.3		ug/L		93	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.3		ug/L		105	70 - 133
Bromodichloromethane	ND		25.0	27.2		ug/L		109	70 - 138
Ethylbenzene	ND		25.0	24.4		ug/L		97	70 - 130
Methylene Chloride	ND		25.0	24.4		ug/L		98	52 - 130
Tetrachloroethene	ND		25.0	25.8		ug/L		103	70 - 137
Toluene	ND		25.0	24.5		ug/L		98	70 - 130
trans-1,2-Dichloroethene	ND		25.0	27.5		ug/L		110	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.1		ug/L		100	70 - 138
Vinyl chloride	ND		25.0	22.5		ug/L		90	50 - 137
Trichloroethene	ND		25.0	26.9		ug/L		108	70 - 130
cis-1,2-Dichloroethene	ND		25.0	26.5		ug/L		106	70 - 130
Naphthalene	ND		25.0	25.5		ug/L		102	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	99		80 - 128

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177200-D-4 MSD

Matrix: Water

Analysis Batch: 390838

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
1,1,1-Trichloroethane	ND		25.0	26.9		ug/L		107	70 - 130	2	20
1,1,1,2-Tetrachloroethane	ND		25.0	27.7		ug/L		111	63 - 130	5	30
1,1,2-Trichloroethane	ND		25.0	26.6		ug/L		106	70 - 130	1	25
1,1-Dichloroethane	ND		25.0	26.4		ug/L		106	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	24.2		ug/L		97	70 - 130	0	20
1,2-Dichlorobenzene	ND		25.0	26.6		ug/L		106	70 - 130	1	20
1,2-Dichloroethane	ND		25.0	27.4		ug/L		110	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	27.6		ug/L		110	69 - 130	1	20
1,3-Dichlorobenzene	ND		25.0	26.1		ug/L		105	70 - 130	0	20
1,4-Dichlorobenzene	ND		25.0	26.1		ug/L		105	70 - 130	0	20
Benzene	0.44	J,DX	25.0	27.3		ug/L		107	66 - 130	1	20
Bromoform	ND		25.0	27.9		ug/L		112	59 - 150	6	25
Bromomethane	ND		25.0	22.5		ug/L		90	62 - 131	1	25
Carbon tetrachloride	ND		25.0	28.1		ug/L		112	60 - 150	2	25
Chlorobenzene	ND		25.0	25.3		ug/L		101	70 - 130	1	20
Dibromochloromethane	ND		25.0	25.8		ug/L		103	70 - 148	3	25
Chloroethane	ND		25.0	25.1		ug/L		100	68 - 130	1	25
Chloroform	ND		25.0	25.9		ug/L		104	70 - 130	1	20
Chloromethane	ND		25.0	23.2		ug/L		93	39 - 144	0	25
cis-1,3-Dichloropropene	ND		25.0	26.8		ug/L		107	70 - 133	2	20
Bromodichloromethane	ND		25.0	27.7		ug/L		111	70 - 138	2	20
Ethylbenzene	ND		25.0	24.6		ug/L		98	70 - 130	1	20
Methylene Chloride	ND		25.0	24.6		ug/L		99	52 - 130	1	20
Tetrachloroethene	ND		25.0	25.5		ug/L		102	70 - 137	1	20
Toluene	ND		25.0	24.5		ug/L		98	70 - 130	0	20
trans-1,2-Dichloroethene	ND		25.0	27.7		ug/L		111	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	70 - 138	3	25
Vinyl chloride	ND		25.0	22.1		ug/L		88	50 - 137	2	30
Trichloroethene	ND		25.0	27.0		ug/L		108	70 - 130	0	20
cis-1,2-Dichloroethene	ND		25.0	26.6		ug/L		106	70 - 130	0	20
Naphthalene	ND		25.0	27.1		ug/L		108	60 - 140	6	30

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	104		76 - 132
Toluene-d8 (Surr)	98		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-389480/3

Matrix: Water

Analysis Batch: 389480

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Specific Conductance	ND		1.0	1.0	umhos/cm			02/21/17 07:48	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-389480/4
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	766		umhos/cm		100	90 - 110

Lab Sample ID: 440-176949-B-1 DU
Matrix: Water
Analysis Batch: 389480

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	10		9.82		umhos/cm		4	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-390730/1-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390730

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		02/27/17 09:28	02/27/17 14:48	1

Lab Sample ID: LCS 440-390730/2-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	36.1		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-390730/3-A
Matrix: Water
Analysis Batch: 390827

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 390730

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	36.4		mg/L		91	78 - 114	1	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

GC/MS VOA

Analysis Batch: 390838

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177317-1	Outfall018_20170217_Grab	Total/NA	Water	624	
440-177317-3	TB-20170217	Total/NA	Water	624	
MB 440-390838/4	Method Blank	Total/NA	Water	624	
LCS 440-390838/5	Lab Control Sample	Total/NA	Water	624	
440-177200-D-4 MS	Matrix Spike	Total/NA	Water	624	
440-177200-D-4 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 389106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177317-1	Outfall018_20170217_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 389480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177317-1	Outfall018_20170217_Grab	Total/NA	Water	120.1	
MB 440-389480/3	Method Blank	Total/NA	Water	120.1	
LCS 440-389480/4	Lab Control Sample	Total/NA	Water	120.1	
440-176949-B-1 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 390730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177317-1	Outfall018_20170217_Grab	Total/NA	Water	1664A	
MB 440-390730/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-390730/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-390730/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 390827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177317-1	Outfall018_20170217_Grab	Total/NA	Water	1664A	390730
MB 440-390730/1-A	Method Blank	Total/NA	Water	1664A	390730
LCS 440-390730/2-A	Lab Control Sample	Total/NA	Water	1664A	390730
LCSD 440-390730/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	390730

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-177317-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichloroethane
624		Water	Trichloroethene



CHAIN OF CUSTODY FORM

Test America

EDB PS 6U X

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 018 Grab</p>		<p>Meter serial # 177317</p>				
<p>Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3289 Cell 949-333-9055</p>		<p>Field Readings (Include units) Time of Readings: 1220 DO 10.54 mg/L pH 7.15 pH unit Temp 12.6 C</p>		<p>Field readings QC Checked by: <i>[Signature]</i> Date/Time: 2/17/17</p>				
<p>Test America's services under this CoC shall be performed in accordance with the TACs within Biotek Services Agreement 2015. (B. TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</p>		<p>Project Manager: Katherine Miller 520.269.8606, 520.904.6944 (cell)</p>		<p>Comments</p>				
<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Oil & Grease (E1594-HEM) X</p>		<p>VOCS - only 1,1-DCE, 1,2-DCA, TCE (E624) X</p>				
<p>Sampler: Dan Smith</p>		<p>Settleable Solids (E160.5 (SM2540F)) X</p>		<p>Conductivity (SM2510B / E120.1) X</p>				
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD
Outfall 018	Outfall018_20170217_Grab	2/17/2017	WM	1L Glass Amber	2	HCl	15	No
			WM	40 mL VOA	3	HCl	30	No
			WM	1L Poly	1	None	70	No
			WM	500 mL Poly	1	None	75	No
			WM	1L Glass Amber	2	HCl	15	No
			WM	40 mL VOA	3	HCl	30	No
			WM	500 mL Poly	1	None	75	No
			WQ	40 mL VOA	3	HCl	30	No
Tip Blanks	TB-20170217	2/17/2017	WQ					



440-177317 Chain of Custody

Relinquished By	Date/Time	Company	Received By	Date/Time	Company
<i>[Signature]</i>	2/17/17	JMA	<i>[Signature]</i>	2/17/17 1630	
Relinquished By	Date/Time	Company	Received By	Date/Time	Company
<i>[Signature]</i>	2/17/17 1450		<i>[Signature]</i>	2/17/17 1450	
Relinquished By	Date/Time	Company	Received By	Date/Time	Company

Turn-around time: (Check)
 24 Hour: ___ 72 Hour: ___ 10 Day: ___ X
 48 Hour: ___ 5 Day: ___ Normal: ___

Sample Integrity: (Check)
 Intact: ___ On ice: 1/4/17
 Store samples for 6 months: 12 SCLP
 Data Requirements: (Check)
 No Level IV: ___ All Level IV: ___ X



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177317-1

Login Number: 177317

List Number: 1

Creator: Escalante, Maria I

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177395-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 30, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MECX Project No.: 1272.003H.01

Sample Delivery Group: 440-177395-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170218_Comp	440-177395-1	N/A	Water	2/18/17 12:40 PM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540
Outfall018_20170218_Comp_F	440-177395-3	N/A	Water	2/18/17 12:40 PM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177395-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved.
- Field and laboratory personnel signed and dated the COCs.
- Custody seals were present and intact on the coolers upon receipt at TA-Irvine.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.
- The receipt checklist from TA-Sacramento noted extra sample volume received was not listed on the transfer COC.

The following issues were noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 4, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 0)*, *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review (2011)*.

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except the following: 2,3,7,8-TCDD, 2,3,4,7,8-PeCDF, 1,2,3,7,8,9-HxCDF, and 2,3,4,6,7,8-HxCDF, and detects for all totals. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The method blank concentrations of 1,2,3,4,6,7,8-HpCDD and OCDD were not sufficient to qualify the sample results above the reporting limit. The peaks comprising total HpCDD in the method blank were the same peaks comprising the total in sample Outfall018_20170218_Comp; however, as the associated isomer was not qualified as a



nondetect, total HpCDD was qualified as estimated (J). The reviewer verified that peaks comprising the results for remaining totals in the sample included more peaks or different peaks than the method blank totals. Total PeCDD was not qualified for method blank contamination. The sample results for totals HxCDD, HxCDF, HpCDF, PeCDF, and TCDF were qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification unless identified by the laboratory as an EMPC. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL. Isomer 1,2,3,7,8,9-HxCDF reported at the EDL was subsequently qualified as a nondetect, as noted below.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Remaining isomers reported as EMPCs were qualified as estimated nondetects (UJ) at the level of the EMPC. Totals containing EMPC peaks were qualified as estimated (J).



IV. METHODS 200.8 AND 245.1—METALS AND MERCURY

Marcia Hilchey of MEC^x reviewed the SDG on April 3, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met with the following exception. Sample Outfall018_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. All dissolved metals and dissolved mercury results from this sample were qualified as estimated (J for detects, UJ for nondetects).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for some CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with the analysis of total metals; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA and ICSAB associated with analysis of total metals; this review is based on summary data for those ICSA and ICSAB analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall018_20170218_Comp and Outfall018_20170218_Comp_F for Method 200.8. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively. MS/MSD analyses were not performed on a sample from this SDG for method 245.1.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.



V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

The target compound was not detected in method blank.

V.3.2 LABORATORY CONTROL SAMPLES

The recovery of alpha BHC was within the laboratory control limits of 37-134%.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were performed on the sample of this SDG. Recoveries of alpha BHC and the RPD were within the laboratory control limits of 40-120% and $\leq 30\%$, respectively.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.



VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.

VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

The recovery was within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on April 6, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).



VII.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.



VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 30, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 180.1 and 300.0*, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH3-G, 4500-CN-E, 5210B, and 5540*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VIII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recovery for ammonia was within the laboratory control limits of 10-200%. Analytical balance calibration logs were not provided by the laboratory.



VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.

VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPD for BOD was $\leq 20\%$.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed on sample Outfall018_20170218_Comp for TDS and turbidity. The RPDs were $\leq 5\%$ and $\leq 20\%$, respectively.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20170218_Comp for chloride and nitrate/nitrite. Recoveries and RPDs were within the laboratory control limits of 80-120% and $\leq 20\%$, respectively.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

Sulfate in sample Outfall018_20170218_Comp was reported from a 5 \times dilution and turbidity from a 20 \times dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401773951

Analysis Method E1613B

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000022	0.000098	0.00000026	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.00061	0.000098	0.0000015	ug/L	MB		
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000079	0.000049	0.00000028	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000050	0.000049	0.00000093	ug/L	MB		
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.00000064	0.000049	0.00000039	ug/L	J,DXqMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000067	0.000049	0.00000023	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000083	0.000049	0.00000014	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000041	0.000049	0.00000022	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.0000019	0.000049	0.00000015	ug/L	J,DXqMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000019	0.000049	0.00000019	ug/L	J,DXq	UJ	*III
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000016	0.000049	0.00000012	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000030	0.000049	0.00000011	ug/L	J,DXqMB	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000049	0.00000025	ug/L	U	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000039	0.000049	0.00000019	ug/L	J,DXq	UJ	*III
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000034	0.000049	0.00000011	ug/L	J,DXq	UJ	*III
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000098	0.00000057	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000028	0.000098	0.00000010	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000098	0.00000015	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000020	0.000049	0.00000034	ug/L	J,DXqMB	J	B, DNQ, *III
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.00010	0.000049	0.00000093	ug/L	MB	J	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000057	0.000049	0.00000021	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.000015	0.000049	0.00000014	ug/L	J,DXqMB	J	B, DNQ, *III

Friday, April 14, 2017

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000022	0.000049	0.00000011	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.0000021	0.000049	0.00000025	ug/L	J,DXqMB	J	DNQ, *III
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000023	0.0000098	0.00000010	ug/L	J,DXMB	J	B, DNQ
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.0000098	0.00000015	ug/L	U	U	

Analysis Method E180.1

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	50	2.0	0.80	NTU			

Analysis Method E200.8

Sample Name Outfall018_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	UJ	H
Copper	D	7440-50-8	2.9	2.0	0.50	ug/L	QP	J	H
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	UJ	H
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	UJ	H

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	4.9	2.0	0.50	ug/L			
Lead	T	7439-92-1	2.1	1.0	0.50	ug/L			
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	

Analysis Method E245.1

Sample Name Outfall018_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	UQP	UJ	H

Analysis Method E245.1**Sample Name** Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:40:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E300**Sample Name** Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:40:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	4.8	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	0.66	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	0.66	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	38	2.5	1.3	mg/L			

Analysis Method E314.0**Sample Name** Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:40:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:40:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0049	0.0024	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/18/2017 12:40:00 PM **Validation Level:** 8**Lab Sample Name:** 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	5.91	0.493	ug/L	U	U	

Analysis Method E625

2,4-Dinitrotoluene	N	121-14-2	ND	4.93	1.97	ug/L	U	U
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.93	1.97	ug/L	U	U
N-Nitrosodimethylamine	N	62-75-9	ND	4.93	0.985	ug/L	U	U
Pentachlorophenol	N	87-86-5	ND	4.93	0.985	ug/L	U	U

Analysis Method SM2540C

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	170	10	5.0	mg/L			

Analysis Method SM2540D

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	35	5.0	2.5	mg/L			

Analysis Method SM4500-CN-E

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	ND	0.200	0.100	mg/L	U	U	

Analysis Method *SM5210B*

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.4	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method *SM5540*

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.082	0.10	0.050	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177395-1

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 10:26:17 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 10:26:18 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177395-1	Outfall018_20170218_Comp	Water	02/18/17 12:40	02/18/17 18:40
440-177395-3	Outfall018_20170218_Comp_F	Water	02/18/17 12:40	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Job ID: 440-177395-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-177395-1

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Outfall018_20170218_Comp_Extra (440-177395-2). Received #2 not listed on coc (Which is on hold).

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-389086 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

Method(s) 1613B: The following sample have one or more analytes with a concentration less than the corresponding estimated detection limit (EDL): Outfall018_20170218_Comp (440-177395-1). The associated peaks elute at the correct retention time for both characteristic ions and have a signal to noise ratio greater than the method required 2.5:1; therefore, per client request, the detections have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		5.91	0.493	ug/L		02/25/17 09:17	02/28/17 15:31	1
Bis(2-ethylhexyl) phthalate	ND		4.93	1.97	ug/L		02/25/17 09:17	02/28/17 15:31	1
N-Nitrosodimethylamine	ND		4.93	0.985	ug/L		02/25/17 09:17	02/28/17 15:31	1
Pentachlorophenol	ND		4.93	0.985	ug/L		02/25/17 09:17	02/28/17 15:31	1
2,4-Dinitrotoluene	ND		4.93	1.97	ug/L		02/25/17 09:17	02/28/17 15:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	61		40 - 120	02/25/17 09:17	02/28/17 15:31	1
2-Fluorobiphenyl	57		50 - 120	02/25/17 09:17	02/28/17 15:31	1
2-Fluorophenol	53		30 - 120	02/25/17 09:17	02/28/17 15:31	1
Nitrobenzene-d5	56		45 - 120	02/25/17 09:17	02/28/17 15:31	1
Phenol-d6	45		35 - 120	02/25/17 09:17	02/28/17 15:31	1
Terphenyl-d14	37		37 - 144	02/25/17 09:17	02/28/17 15:31	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0049	0.0024	ug/L		02/21/17 06:54	02/23/17 00:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	62		10 - 150	02/21/17 06:54	02/23/17 00:41	1
DCB Decachlorobiphenyl (Surr)	76		18 - 134	02/21/17 06:54	02/23/17 00:41	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.8		0.50	0.25	mg/L			02/18/17 22:33	1
Nitrate as N	0.66		0.11	0.055	mg/L			02/18/17 22:33	1
Nitrite as N	ND		0.15	0.070	mg/L			02/18/17 22:33	1
Sulfate	38		2.5	1.3	mg/L			02/18/17 23:17	5

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 15:59	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	0.66		0.15	0.070	mg/L			03/03/17 11:26	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.0000098	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,7,8-PeCDD	ND		0.000049	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,7,8-PeCDF	0.00000030	J,DX q MB	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
2,3,4,7,8-PeCDF	0.00000034	J,DX q	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,4,7,8-HxCDD	0.00000083	J,DX MB	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,6,7,8-HxCDD	0.00000019	J,DX q MB	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,7,8,9-HxCDD	0.00000016	J,DX MB	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.0000067	J,DX MB	0.000049	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,6,7,8-HxCDF	0.0000041	J,DX MB	0.000049	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,7,8,9-HxCDF	0.0000019	J,DX q	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
2,3,4,6,7,8-HxCDF	0.0000039	J,DX q	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,4,6,7,8-HpCDD	0.000050	MB	0.000049	0.0000009	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,4,6,7,8-HpCDF	0.0000079	J,DX MB	0.000049	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
1,2,3,4,7,8,9-HpCDF	0.0000064	J,DX q MB	0.000049	0.0000003	ug/L		02/28/17 11:35	03/03/17 03:41	1
OCDD	0.00061	MB	0.000098	0.0000015	ug/L		02/28/17 11:35	03/03/17 03:41	1
OCDF	0.000022	J,DX MB	0.000098	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total TCDD	ND		0.000098	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total TCDF	0.0000023	J,DX MB	0.000098	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total PeCDD	0.0000021	J,DX q MB	0.000049	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total PeCDF	0.0000022	J,DX q MB	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total HxCDD	0.000015	J,DX q MB	0.000049	0.0000001	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total HxCDF	0.0000057	J,DX q MB	0.000049	0.0000002	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total HpCDD	0.00010	MB	0.000049	0.0000009	ug/L		02/28/17 11:35	03/03/17 03:41	1
Total HpCDF	0.000020	J,DX q MB	0.000049	0.0000003	ug/L		02/28/17 11:35	03/03/17 03:41	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	76		25 - 164				02/28/17 11:35	03/03/17 03:41	1
13C-2,3,7,8-TCDF	79		24 - 169				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,7,8-PeCDD	78		25 - 181				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,7,8-PeCDF	76		24 - 185				02/28/17 11:35	03/03/17 03:41	1
13C-2,3,4,7,8-PeCDF	85		21 - 178				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,4,7,8-HxCDD	89		32 - 141				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,6,7,8-HxCDD	85		28 - 130				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,4,7,8-HxCDF	88		26 - 152				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,6,7,8-HxCDF	85		26 - 123				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,7,8,9-HxCDF	81		29 - 147				02/28/17 11:35	03/03/17 03:41	1
13C-2,3,4,6,7,8-HxCDF	89		28 - 136				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,4,6,7,8-HpCDD	93		23 - 140				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,4,6,7,8-HpCDF	97		28 - 143				02/28/17 11:35	03/03/17 03:41	1
13C-1,2,3,4,7,8,9-HpCDF	100		26 - 138				02/28/17 11:35	03/03/17 03:41	1
13C-OCDD	100		17 - 157				02/28/17 11:35	03/03/17 03:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197				02/28/17 11:35	03/03/17 03:41	1

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.0000098	0.0000005	ug/L		02/28/17 11:35	03/03/17 22:30	1
				7					
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C-2,3,7,8-TCDF	94		24 - 169				02/28/17 11:35	03/03/17 22:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
³⁷ Cl-4-2,3,7,8-TCDD	85		35 - 197				02/28/17 11:35	03/03/17 22:30	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/22/17 21:11	02/26/17 11:28	1
Copper	4.9		2.0	0.50	ug/L		02/22/17 21:11	02/26/17 11:28	1
Lead	2.1		1.0	0.50	ug/L		02/22/17 21:11	02/26/17 11:28	1
Selenium	ND		2.0	0.50	ug/L		02/22/17 21:11	02/26/17 11:28	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 20:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	50		2.0	0.80	NTU			02/18/17 22:40	20
Total Dissolved Solids	170		10	5.0	mg/L			02/23/17 08:39	1
Total Suspended Solids	35		5.0	2.5	mg/L			02/24/17 11:16	1
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 18:42	1
Methylene Blue Active Substances	0.082	J,DX	0.10	0.050	mg/L			02/18/17 21:13	1
Biochemical Oxygen Demand	1.4	J,DX	2.0	0.50	mg/L			02/20/17 06:41	1

Client Sample ID: Outfall018_20170218_Comp_F

Lab Sample ID: 440-177395-3

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND	QP	1.0	0.25	ug/L		02/23/17 15:59	02/27/17 15:24	1
Copper	2.9	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:24	1
Lead	ND	QP	1.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:24	1
Selenium	ND	QP	2.0	0.50	ug/L		02/23/17 15:59	02/27/17 15:24	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND	QP	0.20	0.10	ug/L		03/02/17 22:41	03/03/17 17:06	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			1015 mL	2 mL	390550	02/25/17 09:17	JC1	TAL IRV
Total/NA	Analysis	625		1			390988	02/28/17 15:31	DF	TAL IRV
Total/NA	Prep	608			1025 mL	2 mL	389220	02/21/17 06:54	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			389885	02/23/17 00:41	KS	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389085	02/18/17 22:33	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	389086	02/18/17 22:33	NTN	TAL IRV
Total/NA	Analysis	300.0		5	5 mL	1.0 mL	389086	02/18/17 23:17	NTN	TAL IRV
Total/NA	Analysis	314.0		1			389485	02/21/17 15:59	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			391864	03/03/17 11:26	TLN	TAL IRV
Total/NA	Prep	1613B			1016.9 mL	20 uL	152449	02/28/17 11:35	GLB	TAL SAC
Total/NA	Analysis	1613B		1			152940	03/03/17 03:41	SMA	TAL SAC
Total/NA	Prep	1613B	RA		1016.9 mL	20 uL	152449	02/28/17 11:35	GLB	TAL SAC
Total/NA	Analysis	1613B	RA	1			153336	03/03/17 22:30	ALM	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	389977	02/22/17 21:11	CDH	TAL IRV
Total Recoverable	Analysis	200.8		1			390652	02/26/17 11:28	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	390895	02/27/17 20:12	DB	TAL IRV
Total/NA	Analysis	245.1		1			391252	02/28/17 20:20	DB	TAL IRV
Total/NA	Analysis	180.1		20			389130	02/18/17 22:40	RB	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	390054	02/23/17 08:39	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	390386	02/24/17 11:16	MMH	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	389329	02/20/17 14:18	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			389681	02/21/17 17:59	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	390502	02/24/17 18:42	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	389129	02/18/17 21:13	EN	TAL IRV
Total/NA	Analysis	SM5210B		1			389203	02/20/17 06:41	XL	TAL IRV

Client Sample ID: Outfall018_20170218_Comp_F

Lab Sample ID: 440-177395-3

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 15:24	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	391751	03/02/17 22:41	DB	TAL IRV
Dissolved	Analysis	245.1		1			391968	03/03/17 17:06	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-390550/1-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 390550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,6-Trichlorophenol	ND		6.00	0.500	ug/L		02/25/17 09:17	02/28/17 11:32	1
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
N-Nitrosodimethylamine	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
Pentachlorophenol	ND		5.00	1.00	ug/L		02/25/17 09:17	02/28/17 11:32	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		02/25/17 09:17	02/28/17 11:32	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	76		40 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorobiphenyl	62		50 - 120	02/25/17 09:17	02/28/17 11:32	1
2-Fluorophenol	58		30 - 120	02/25/17 09:17	02/28/17 11:32	1
Nitrobenzene-d5	60		45 - 120	02/25/17 09:17	02/28/17 11:32	1
Phenol-d6	53		35 - 120	02/25/17 09:17	02/28/17 11:32	1
Terphenyl-d14	84		37 - 144	02/25/17 09:17	02/28/17 11:32	1

Lab Sample ID: LCS 440-390550/2-A

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	10.0	7.592		ug/L		76	37 - 144
Bis(2-ethylhexyl) phthalate	10.0	8.366		ug/L		84	10 - 150
N-Nitrosodimethylamine	10.0	6.704		ug/L		67	26 - 117
Pentachlorophenol	20.0	15.14		ug/L		76	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	84		40 - 120
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	63		30 - 120
Nitrobenzene-d5	69		45 - 120
Phenol-d6	61		35 - 120
Terphenyl-d14	80		37 - 144

Lab Sample ID: 440-177394-K-1-A MS

Matrix: Water

Analysis Batch: 390988

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
2,4,6-Trichlorophenol	ND		10.4	7.480		ug/L		72	37 - 144
Bis(2-ethylhexyl) phthalate	ND		10.4	3.066	J,DX	ug/L		29	10 - 150
N-Nitrosodimethylamine	ND		10.4	6.515		ug/L		63	12 - 123
Pentachlorophenol	ND		20.8	15.07		ug/L		72	14 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4,6-Tribromophenol	75		40 - 120
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	59		30 - 120
Nitrobenzene-d5	64		45 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-177394-K-1-A MS
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390550

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Phenol-d6	60		35 - 120
Terphenyl-d14	30	LG	37 - 144

Lab Sample ID: 440-177394-K-1-B MSD
Matrix: Water
Analysis Batch: 390988

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390550

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
				Result	Qualifier						
2,4,6-Trichlorophenol	ND		9.76	6.996		ug/L		72	37 - 144	7	30
Bis(2-ethylhexyl) phthalate	ND		9.76	3.659	J,DX	ug/L		38	10 - 150	18	25
N-Nitrosodimethylamine	ND		9.76	6.496		ug/L		67	12 - 123	0	35
Pentachlorophenol	ND		19.5	14.08		ug/L		72	14 - 150	7	25

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	73		40 - 120
2-Fluorobiphenyl	63		50 - 120
2-Fluorophenol	57		30 - 120
Nitrobenzene-d5	64		45 - 120
Phenol-d6	60		35 - 120
Terphenyl-d14	36	LG	37 - 144

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-389220/1-A
Matrix: Water
Analysis Batch: 390125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389220

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		02/20/17 07:21	02/23/17 17:11	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	43		10 - 150	02/20/17 07:21	02/23/17 17:11	1
DCB Decachlorobiphenyl (Surr)	59		18 - 134	02/20/17 07:21	02/23/17 17:11	1

Lab Sample ID: LCS 440-389220/5-A
Matrix: Water
Analysis Batch: 389885

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389220

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
alpha-BHC	0.200	0.131	PI	ug/L		66	37 - 134

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	58	PI	10 - 150
DCB Decachlorobiphenyl (Surr)	75	PI	18 - 134

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: 440-177394-H-1-A MSD

Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	ND		0.194	0.144		ug/L		74	40 - 120	12	30
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	65		10 - 150								
DCB Decachlorobiphenyl (Surr)	91		18 - 134								

Lab Sample ID: 440-177394-I-1-A MS

Matrix: Water
Analysis Batch: 389885

Client Sample ID: Matrix Spike

Prep Type: Total/NA
Prep Batch: 389220

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits	RPD	Limit
alpha-BHC	ND		0.207	0.163		ug/L		78	40 - 120		
MS MS											
Surrogate	%Recovery	Qualifier	Limits								
Tetrachloro-m-xylene	72		10 - 150								
DCB Decachlorobiphenyl (Surr)	86		18 - 134								

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-389085/4

Matrix: Water
Analysis Batch: 389085

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/18/17 13:16	1
Nitrite as N	ND		0.15	0.070	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389085/2

Matrix: Water
Analysis Batch: 389085

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nitrate as N	1.13	1.09		mg/L		96	90 - 110		
Nitrite as N	1.52	1.46		mg/L		96	90 - 110		

Lab Sample ID: 440-177395-1 MS

Matrix: Water
Analysis Batch: 389085

Client Sample ID: Outfall018_20170218_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Nitrate as N	0.66		1.13	1.82		mg/L		103	80 - 120		
Nitrite as N	ND		1.52	1.52		mg/L		100	80 - 120		

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-177395-1 MSD

Matrix: Water

Analysis Batch: 389085

Client Sample ID: Outfall018_20170218_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	0.66		1.13	1.82		mg/L		103	80 - 120	0	20
Nitrite as N	ND		1.52	1.52		mg/L		100	80 - 120	0	20

Lab Sample ID: MB 440-389086/4

Matrix: Water

Analysis Batch: 389086

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/18/17 13:16	1
Sulfate	ND		0.50	0.25	mg/L			02/18/17 13:16	1

Lab Sample ID: LCS 440-389086/2

Matrix: Water

Analysis Batch: 389086

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.75		mg/L		95	90 - 110
Sulfate	5.00	5.19		mg/L		104	90 - 110

Lab Sample ID: 440-177395-1 MS

Matrix: Water

Analysis Batch: 389086

Client Sample ID: Outfall018_20170218_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	4.8		5.00	9.98		mg/L		104	80 - 120

Lab Sample ID: 440-177395-1 MSD

Matrix: Water

Analysis Batch: 389086

Client Sample ID: Outfall018_20170218_Comp

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.8		5.00	10.0		mg/L		105	80 - 120	0	20

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-389485/3

Matrix: Water

Analysis Batch: 389485

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/21/17 08:57	1

Lab Sample ID: LCS 440-389485/2

Matrix: Water

Analysis Batch: 389485

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	25.5		ug/L		102	85 - 115

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 314.0 - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-389485/5
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.92	J,DX	ug/L		98	75 - 125

Lab Sample ID: 440-177165-A-1 MS
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.6		ug/L		110	80 - 120

Lab Sample ID: 440-177165-A-1 MSD
Matrix: Water
Analysis Batch: 389485

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perchlorate	ND		25.0	27.7		ug/L		111	80 - 120	1	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8-PeCDD	0.000000560	J,DX	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8-PeCDF	0.000000447	J,DX q	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
2,3,4,7,8-PeCDF	ND		0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,7,8-HxCDD	0.000000537	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,6,7,8-HxCDD	0.000000475	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8,9-HxCDD	0.000000479	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,7,8-HxCDF	0.000000494	J,DX q	0.000050	0.0000003	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,6,7,8-HxCDF	0.000000507	J,DX	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
2,3,4,6,7,8-HxCDF	ND		0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,6,7,8-HpCDD	0.000000905	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,6,7,8-HpCDF	0.000000697	J,DX q	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
1,2,3,4,7,8,9-HpCDF	0.000000482	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
OCDD	0.00000493	J,DX q	0.00010	0.0000003	ug/L		02/28/17 08:19	03/02/17 12:28	1
				5					
OCDF	0.00000275	J,DX	0.00010	0.0000003	ug/L		02/28/17 08:19	03/02/17 12:28	1
				4					
Total TCDD	0.000000234	J,DX q	0.000010	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
				6					
Total TCDF	0.000000361	J,DX	0.000010	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
				3					
Total PeCDD	0.000000560	J,DX	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
				4					
Total PeCDF	0.000000447	J,DX q	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
				7					
Total HxCDD	0.00000149	J,DX	0.000050	0.0000001	ug/L		02/28/17 08:19	03/02/17 12:28	1
				7					
Total HxCDF	0.00000100	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
				7					
Total HpCDD	0.00000217	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
				6					
Total HpCDF	0.00000118	J,DX q	0.000050	0.0000002	ug/L		02/28/17 08:19	03/02/17 12:28	1
				2					

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	56		25 - 164	02/28/17 08:19	03/02/17 12:28	1
13C-2,3,7,8-TCDF	57		24 - 169	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,7,8-PeCDD	54		25 - 181	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,7,8-PeCDF	52		24 - 185	02/28/17 08:19	03/02/17 12:28	1
13C-2,3,4,7,8-PeCDF	62		21 - 178	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,7,8-HxCDD	62		32 - 141	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,6,7,8-HxCDD	61		28 - 130	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,7,8-HxCDF	58		26 - 152	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	02/28/17 08:19	03/02/17 12:28	1
13C-2,3,4,6,7,8-HxCDF	59		28 - 136	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,6,7,8-HpCDD	57		23 - 140	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,6,7,8-HpCDF	59		28 - 143	02/28/17 08:19	03/02/17 12:28	1
13C-1,2,3,4,7,8,9-HpCDF	64		26 - 138	02/28/17 08:19	03/02/17 12:28	1
13C-OCDD	58		17 - 157	02/28/17 08:19	03/02/17 12:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	98		35 - 197	02/28/17 08:19	03/02/17 12:28	1

Lab Sample ID: LCS 320-152449/2-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000215		ug/L		107	67 - 158
2,3,7,8-TCDF	0.000200	0.000222	MB	ug/L		111	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.00107	MB	ug/L		107	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.00112	MB	ug/L		112	80 - 134

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-152449/2-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,3,4,7,8-PeCDF	0.00100	0.00106		ug/L		106	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.00100	MB	ug/L		100	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.00108	MB	ug/L		108	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000931	MB	ug/L		93	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.00103	MB	ug/L		103	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.00111	MB	ug/L		111	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.00112		ug/L		112	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.00114		ug/L		114	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.00109	MB	ug/L		109	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.00108	MB	ug/L		108	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.00101	MB	ug/L		101	78 - 138
OCDD	0.00200	0.00209	MB	ug/L		105	78 - 144
OCDF	0.00200	0.00220	MB	ug/L		110	63 - 170

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	55		20 - 175
13C-2,3,7,8-TCDF	56		22 - 152
13C-1,2,3,7,8-PeCDD	56		21 - 227
13C-1,2,3,7,8-PeCDF	56		21 - 192
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-1,2,3,4,7,8-HxCDD	69		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	66		21 - 159
13C-1,2,3,7,8,9-HxCDF	62		17 - 205
13C-2,3,4,6,7,8-HxCDF	69		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	70		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	71		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	78		20 - 186
13C-OCDD	72		13 - 199

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	97		31 - 191

Lab Sample ID: LCSD 320-152449/3-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
2,3,7,8-TCDD	0.000200	0.000200		ug/L		100	67 - 158	7	50
2,3,7,8-TCDF	0.000200	0.000214	MB	ug/L		107	75 - 158	4	50
1,2,3,7,8-PeCDD	0.00100	0.00105	MB	ug/L		105	70 - 142	2	50
1,2,3,7,8-PeCDF	0.00100	0.00108	MB	ug/L		108	80 - 134	3	50
2,3,4,7,8-PeCDF	0.00100	0.000985		ug/L		99	68 - 160	7	50
1,2,3,4,7,8-HxCDD	0.00100	0.000949	MB	ug/L		95	70 - 164	5	50
1,2,3,6,7,8-HxCDD	0.00100	0.00104	MB	ug/L		104	76 - 134	4	50
1,2,3,7,8,9-HxCDD	0.00100	0.000972	MB	ug/L		97	64 - 162	4	50
1,2,3,4,7,8-HxCDF	0.00100	0.000993	MB	ug/L		99	72 - 134	4	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-152449/3-A
Matrix: Water
Analysis Batch: 152939

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 152449

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,6,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	84 - 130	8	50
1,2,3,7,8,9-HxCDF	0.00100	0.00105		ug/L		105	78 - 130	6	50
2,3,4,6,7,8-HxCDF	0.00100	0.00109		ug/L		109	70 - 156	4	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.00103	MB	ug/L		103	70 - 140	6	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.00100	MB	ug/L		100	82 - 122	7	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000963	MB	ug/L		96	78 - 138	5	50
OCDD	0.00200	0.00196	MB	ug/L		98	78 - 144	7	50
OCDF	0.00200	0.00208	MB	ug/L		104	63 - 170	6	50

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C-2,3,7,8-TCDD	55		20 - 175
13C-2,3,7,8-TCDF	54		22 - 152
13C-1,2,3,7,8-PeCDD	57		21 - 227
13C-1,2,3,7,8-PeCDF	53		21 - 192
13C-2,3,4,7,8-PeCDF	64		13 - 328
13C-1,2,3,4,7,8-HxCDD	63		21 - 193
13C-1,2,3,6,7,8-HxCDD	59		25 - 163
13C-1,2,3,4,7,8-HxCDF	58		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	55		17 - 205
13C-2,3,4,6,7,8-HxCDF	58		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	60		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	62		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	67		20 - 186
13C-OCDD	64		13 - 199

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
37Cl4-2,3,7,8-TCDD	90		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-152449/1-A
Matrix: Water
Analysis Batch: 153336

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152449

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000007	ug/L		02/28/17 08:19	03/03/17 14:18	1

Isotope Dilution	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF - RA	66		24 - 169	02/28/17 08:19	03/03/17 14:18	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD - RA	86		35 - 197	02/28/17 08:19	03/03/17 14:18	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389977/1-A
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/22/17 21:11	02/26/17 11:24	1
Copper	ND		2.0	0.50	ug/L		02/22/17 21:11	02/26/17 11:24	1
Lead	ND		1.0	0.50	ug/L		02/22/17 21:11	02/26/17 11:24	1
Selenium	ND		2.0	0.50	ug/L		02/22/17 21:11	02/26/17 11:24	1

Lab Sample ID: LCS 440-389977/2-A
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	79.7		ug/L		100	85 - 115
Copper	80.0	80.7		ug/L		101	85 - 115
Lead	80.0	80.0		ug/L		100	85 - 115
Selenium	80.0	77.5		ug/L		97	85 - 115

Lab Sample ID: 440-177395-1 MS
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Outfall018_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	80.5		ug/L		101	70 - 130
Copper	4.9		80.0	85.2		ug/L		100	70 - 130
Lead	2.1		80.0	83.6		ug/L		102	70 - 130
Selenium	ND		80.0	75.4		ug/L		94	70 - 130

Lab Sample ID: 440-177395-1 MSD
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Outfall018_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	79.3		ug/L		99	70 - 130	1	20
Copper	4.9		80.0	82.7		ug/L		97	70 - 130	3	20
Lead	2.1		80.0	81.2		ug/L		99	70 - 130	3	20
Selenium	ND		80.0	74.1		ug/L		93	70 - 130	2	20

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		02/23/17 15:59	02/27/17 14:41	1
Copper	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1
Lead	ND		1.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1
Selenium	ND		2.0	0.50	ug/L		02/23/17 15:59	02/27/17 14:41	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	80.0	76.7		ug/L		96	85 - 115
Copper	80.0	90.7		ug/L		113	85 - 115
Lead	80.0	78.2		ug/L		98	85 - 115
Selenium	80.0	78.6		ug/L		98	85 - 115

Lab Sample ID: 440-177395-3 MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall018_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cadmium	ND	QP	80.0	75.7		ug/L		95	70 - 130
Copper	2.9	QP	80.0	78.6		ug/L		95	70 - 130
Lead	ND	QP	80.0	76.8		ug/L		96	70 - 130
Selenium	ND	QP	80.0	76.0		ug/L		95	70 - 130

Lab Sample ID: 440-177395-3 MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall018_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	ND	QP	80.0	78.9		ug/L		99	70 - 130	4	20
Copper	2.9	QP	80.0	79.7		ug/L		96	70 - 130	1	20
Lead	ND	QP	80.0	79.5		ug/L		99	70 - 130	3	20
Selenium	ND	QP	80.0	80.3		ug/L		100	70 - 130	6	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-390895/1-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390895

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/27/17 20:12	02/28/17 19:10	1

Lab Sample ID: LCS 440-390895/2-A
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	8.00	8.29		ug/L		104	85 - 115

Lab Sample ID: 440-177985-A-1-B MS
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		8.00	8.01		ug/L		100	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-177985-A-1-C MSD
Matrix: Water
Analysis Batch: 391252

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 390895

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.26		ug/L		103	70 - 130	3	20

Lab Sample ID: MB 440-389636/1-F
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 391751

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/02/17 22:41	03/03/17 16:39	1

Lab Sample ID: LCS 440-389636/2-F
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391751

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.74		ug/L		97	85 - 115

Lab Sample ID: 440-177399-A-3-L MS
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 391751

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.1		8.00	7.91		ug/L		86	70 - 130

Lab Sample ID: 440-177399-A-3-M MSD
Matrix: Water
Analysis Batch: 391968

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 391751

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	1.1		8.00	7.94		ug/L		86	70 - 130	0	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-389130/5
Matrix: Water
Analysis Batch: 389130

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/18/17 22:40	1

Lab Sample ID: 440-177395-1 DU
Matrix: Water
Analysis Batch: 389130

Client Sample ID: Outfall018_20170218_Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	50		50.4		NTU		0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 180.1 - Turbidity, Nephelometric (Continued)

Lab Sample ID: MB 440-389294/5
Matrix: Water
Analysis Batch: 389294

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/20/17 11:26	1

Lab Sample ID: 440-177394-O-1 DU
Matrix: Water
Analysis Batch: 389294

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Turbidity	140		143		NTU		0.1	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-390054/1
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			02/23/17 08:39	1

Lab Sample ID: LCS 440-390054/2
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1010		mg/L		101	90 - 110

Lab Sample ID: 440-177195-K-1 DU
Matrix: Water
Analysis Batch: 390054

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	190		191		mg/L		0.5	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-390386/1
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			02/24/17 11:16	1

Lab Sample ID: LCS 440-390386/2
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	953		mg/L		95	85 - 115

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: 440-177399-O-1 DU
Matrix: Water
Analysis Batch: 390386

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	50		50.0		mg/L		1	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-389329/1-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389329

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		02/20/17 14:18	02/21/17 17:59	1

Lab Sample ID: LCS 440-389329/2-A
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	100	100		ug/L		100	90 - 110

Lab Sample ID: 440-177394-R-1-B MS
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Total	ND		100	95.8		ug/L		96	70 - 115

Lab Sample ID: 440-177394-R-1-C MSD
Matrix: Water
Analysis Batch: 389681

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389329

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Total	ND		100	98.9		ug/L		99	70 - 115	3	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-390502/10
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/24/17 17:48	1

Lab Sample ID: LCS 440-390502/11
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia (as N)	5.00	5.140		mg/L		103	90 - 110

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: MRL 440-390502/9
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2640		mg/L		132	10 - 200

Lab Sample ID: 440-177923-C-1 MS
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.460		mg/L		109	90 - 110

Lab Sample ID: 440-177923-C-1 MSD
Matrix: Water
Analysis Batch: 390502

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.240		mg/L		105	90 - 110	4	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-389129/3
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/18/17 21:13	1

Lab Sample ID: LCS 440-389129/4
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.260		mg/L		104	90 - 110

Lab Sample ID: 720-77778-B-1 MS
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.062	J,DX	0.250	0.286		mg/L		89	50 - 125

Lab Sample ID: 720-77778-B-1 MSD
Matrix: Water
Analysis Batch: 389129

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	0.062	J,DX	0.250	0.285		mg/L		89	50 - 125	0	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-389203/1
 Matrix: Water
 Analysis Batch: 389203

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/20/17 06:41	1

Lab Sample ID: LCS 440-389203/4
 Matrix: Water
 Analysis Batch: 389203

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	191		mg/L		96	85 - 115

Lab Sample ID: LCSD 440-389203/5
 Matrix: Water
 Analysis Batch: 389203

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	194		mg/L		98	85 - 115	2	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

GC/MS Semi VOA

Prep Batch: 390550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	625	
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	

Analysis Batch: 390988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	625	390550
MB 440-390550/1-A	Method Blank	Total/NA	Water	625	390550
LCS 440-390550/2-A	Lab Control Sample	Total/NA	Water	625	390550
440-177394-K-1-A MS	Matrix Spike	Total/NA	Water	625	390550
440-177394-K-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	390550

GC Semi VOA

Prep Batch: 389220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	608	
MB 440-389220/1-A	Method Blank	Total/NA	Water	608	
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608	
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608	

Analysis Batch: 389885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	608 Pesticides	389220
LCS 440-389220/5-A	Lab Control Sample	Total/NA	Water	608 Pesticides	389220
440-177394-H-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	389220
440-177394-I-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	389220

Analysis Batch: 390125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389220/1-A	Method Blank	Total/NA	Water	608 Pesticides	389220

HPLC/IC

Analysis Batch: 389085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	300.0	
MB 440-389085/4	Method Blank	Total/NA	Water	300.0	
LCS 440-389085/2	Lab Control Sample	Total/NA	Water	300.0	
440-177395-1 MS	Outfall018_20170218_Comp	Total/NA	Water	300.0	
440-177395-1 MSD	Outfall018_20170218_Comp	Total/NA	Water	300.0	

Analysis Batch: 389086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	300.0	
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	300.0	
MB 440-389086/4	Method Blank	Total/NA	Water	300.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

HPLC/IC (Continued)

Analysis Batch: 389086 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-389086/2	Lab Control Sample	Total/NA	Water	300.0	
440-177395-1 MS	Outfall018_20170218_Comp	Total/NA	Water	300.0	
440-177395-1 MSD	Outfall018_20170218_Comp	Total/NA	Water	300.0	

Analysis Batch: 389485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	314.0	
MB 440-389485/3	Method Blank	Total/NA	Water	314.0	
LCS 440-389485/2	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-389485/5	Lab Control Sample	Total/NA	Water	314.0	
440-177165-A-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-177165-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

Analysis Batch: 391864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 152449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	1613B	
440-177395-1 - RA	Outfall018_20170218_Comp	Total/NA	Water	1613B	
MB 320-152449/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-152449/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-152449/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-152449/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 152939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-152449/1-A	Method Blank	Total/NA	Water	1613B	152449
LCS 320-152449/2-A	Lab Control Sample	Total/NA	Water	1613B	152449
LCSD 320-152449/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	152449

Analysis Batch: 152940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	1613B	152449

Analysis Batch: 153336

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1 - RA	Outfall018_20170218_Comp	Total/NA	Water	1613B	152449
MB 320-152449/1-A - RA	Method Blank	Total/NA	Water	1613B	152449

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-389636/1-F	Method Blank	Dissolved	Water	FILTRATION	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Metals (Continued)

Filtration Batch: 389636 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-389636/2-F	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177395-3 MS	Outfall018_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177395-3 MSD	Outfall018_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177399-A-3-L MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-177399-A-3-M MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 389977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-389977/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389977/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177395-1 MS	Outfall018_20170218_Comp	Total Recoverable	Water	200.2	
440-177395-1 MSD	Outfall018_20170218_Comp	Total Recoverable	Water	200.2	

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177395-3 MS	Outfall018_20170218_Comp_F	Dissolved	Water	200.2	389636
440-177395-3 MSD	Outfall018_20170218_Comp_F	Dissolved	Water	200.2	389636

Analysis Batch: 390652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total Recoverable	Water	200.8	389977
MB 440-389977/1-A	Method Blank	Total Recoverable	Water	200.8	389977
LCS 440-389977/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389977
440-177395-1 MS	Outfall018_20170218_Comp	Total Recoverable	Water	200.8	389977
440-177395-1 MSD	Outfall018_20170218_Comp	Total Recoverable	Water	200.8	389977

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177395-3 MS	Outfall018_20170218_Comp_F	Dissolved	Water	200.8	390172
440-177395-3 MSD	Outfall018_20170218_Comp_F	Dissolved	Water	200.8	390172

Prep Batch: 390895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	245.1	
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	

Analysis Batch: 391252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	245.1	390895
MB 440-390895/1-A	Method Blank	Total/NA	Water	245.1	390895

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Metals (Continued)

Analysis Batch: 391252 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-390895/2-A	Lab Control Sample	Total/NA	Water	245.1	390895
440-177985-A-1-B MS	Matrix Spike	Total/NA	Water	245.1	390895
440-177985-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	245.1	390895

Prep Batch: 391751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	245.1	389636
MB 440-389636/1-F	Method Blank	Dissolved	Water	245.1	389636
LCS 440-389636/2-F	Lab Control Sample	Dissolved	Water	245.1	389636
440-177399-A-3-L MS	Matrix Spike	Dissolved	Water	245.1	389636
440-177399-A-3-M MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	389636

Analysis Batch: 391968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	245.1	391751
MB 440-389636/1-F	Method Blank	Dissolved	Water	245.1	391751
LCS 440-389636/2-F	Lab Control Sample	Dissolved	Water	245.1	391751
440-177399-A-3-L MS	Matrix Spike	Dissolved	Water	245.1	391751
440-177399-A-3-M MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	391751

General Chemistry

Analysis Batch: 389129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	SM 5540C	
MB 440-389129/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-389129/4	Lab Control Sample	Total/NA	Water	SM 5540C	
720-77778-B-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
720-77778-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 389130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	180.1	
MB 440-389130/5	Method Blank	Total/NA	Water	180.1	
440-177395-1 DU	Outfall018_20170218_Comp	Total/NA	Water	180.1	

Analysis Batch: 389203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	SM5210B	
USB 440-389203/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-389203/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-389203/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 389294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-389294/5	Method Blank	Total/NA	Water	180.1	
440-177394-O-1 DU	Duplicate	Total/NA	Water	180.1	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

General Chemistry (Continued)

Prep Batch: 389329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	Distill/CN	
MB 440-389329/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 389681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	SM 4500 CN E	389329
MB 440-389329/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	389329
LCS 440-389329/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	389329
440-177394-R-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	389329

Analysis Batch: 390054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	SM 2540C	
MB 440-390054/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-390054/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177195-K-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 390386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	SM 2540D	
MB 440-390386/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-390386/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177399-O-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 390502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-390502/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	
LCS 440-390502/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-390502/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-177923-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
LG	LG=Surrogate recovery below the acceptance limits

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
MB	Analyte present in the method blank
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
608 Pesticides	608	Water	alpha-BHC
625	625	Water	2,4,6-Trichlorophenol
625	625	Water	2,4-Dinitrotoluene
625	625	Water	Bis(2-ethylhexyl) phthalate
625	625	Water	N-Nitrosodimethylamine
625	625	Water	Pentachlorophenol
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17 *
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.



440-177395 Chain of Custody

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 018 Comp</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>	
<p>Test America Contract: Urvashi Patel 17461 Deitan Ave Suite #100 Irvine CA 92614 Tel 949.260.3269 Cell 949-333-9055</p>		<p>Sample Description: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Container Type: 500 mL Poly</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se</p>	
<p>Sampler: Dan Smith - Roy Barajas</p>		<p>Sampling Date/Time: 2/18/2017 / 10:40</p>		<p>Preservative: HNO₃</p>		<p>Bole #: 90</p>		<p>Turbidity, TDS (SM2540C/E180.1)</p>		<p>alpha-BHC (E608)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: H₂SO₄</p>		<p>Bole #: 110</p>		<p>Chloride, Nitrate-N, Nitrite-N, NO₃-NO₂-N, Perchlorate (E300)</p>		<p>Ammonia-N (350.2)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 115</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 120</p>		<p>Turbidity, TDS (SM2540C/E180.1)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 130</p>		<p>Chloride, Nitrate-N, Nitrite-N, NO₃-NO₂-N, Perchlorate (E300)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 150</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 160</p>		<p>Turbidity, TDS (SM2540C/E180.1)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 170</p>		<p>Chloride, Nitrate-N, Nitrite-N, NO₃-NO₂-N, Perchlorate (E300)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 180</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 185</p>		<p>Turbidity, TDS (SM2540C/E180.1)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: HNO₃</p>		<p>Bole #: 370</p>		<p>Chloride, Nitrate-N, Nitrite-N, NO₃-NO₂-N, Perchlorate (E300)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 110</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 120</p>		<p>Turbidity, TDS (SM2540C/E180.1)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 130</p>		<p>Chloride, Nitrate-N, Nitrite-N, NO₃-NO₂-N, Perchlorate (E300)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 170</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 180</p>		<p>Turbidity, TDS (SM2540C/E180.1)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: None</p>		<p>Bole #: 185</p>		<p>Chloride, Nitrate-N, Nitrite-N, NO₃-NO₂-N, Perchlorate (E300)</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	
<p>Sample I.D.: Outfall 018, 20170218_Comp</p>		<p>Sample Matrix: WM</p>		<p>Preservative: HNO₃</p>		<p>Bole #: 370</p>		<p>Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc))</p>		<p>4,4'-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625)</p>	

Relinquished By: *[Signature]* Date/Time: 02/18/17 Company: VHA
 Relinquished By: *[Signature]* Date/Time: 2/18/2017 / 10:40 Company: VHA
 Relinquished By: *[Signature]* Date/Time: 2/18/2017 / 10:40 Company: VHA
 Relinquished By: *[Signature]* Date/Time: 2/18/2017 / 10:40 Company: VHA
 Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____
 48 Hour: _____ 5 Day: _____ Normal: _____
 Sample Integrity: (Check) Intact: _____ On Ice: _____
 Store samples for 6 months. Delta Requirements: (Check) No Level IV: _____ All Level IV: _____ X
 0-9/11-2 0-8/11-1 18-SCU



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177395-1

Login Number: 177395

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177395-1

Login Number: 177395

List Number: 3

Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

List Creation: 02/26/17 02:24 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	False	Received extra samples not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-177395-1	Outfall018_20170218_Comp		76		79		78		76
440-177395-1 - RA	Outfall018_20170218_Comp				94				
MB 320-152449/1-A	Method Blank		56		57		54		52
MB 320-152449/1-A - RA	Method Blank				66				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-177395-1	Outfall018_20170218_Comp		85		89		85		88
440-177395-1 - RA	Outfall018_20170218_Comp								
MB 320-152449/1-A	Method Blank		62		62		61		58
MB 320-152449/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-177395-1	Outfall018_20170218_Comp		85		81		89	93	
440-177395-1 - RA	Outfall018_20170218_Comp								
MB 320-152449/1-A	Method Blank		55		54		59	57	
MB 320-152449/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-177395-1	Outfall018_20170218_Comp		97		100		100
440-177395-1 - RA	Outfall018_20170218_Comp						
MB 320-152449/1-A	Method Blank		59		64		58
MB 320-152449/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-152449/2-A	Lab Control Sample	55	56	56	56	64	69	71	69
LCSD 320-152449/3-A	Lab Control Sample Dup	55	54	57	53	64	63	59	58

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-152449/2-A	Lab Control Sample	66	62	69	70	71	78	72
LCSD 320-152449/3-A	Lab Control Sample Dup	58	55	58	60	62	67	64

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177395-2

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/22/2017 9:20:34 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/22/2017 9:20:34 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177395-1	Outfall018_20170218_Comp	Water	02/18/17 12:40	02/18/17 18:40

- 1
- 2
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Job ID: 440-177395-2

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-177395-2**

Comments

No additional comments.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

RAD

Method(s) ExtChrom: Uranium prep batch 160-296908: The following samples contain sediment and are non-homogenous.

Outfall018_20170218_Comp (440-177395-1)

Method(s) PrecSep_0: Radium 228; Prep Batch 294407

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294407. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-21: Radium 226; Prep Batch 294401

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 160-294401. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepped instead to show batch precision.

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

The following sample was prepped at a reduced aliquot due to sediment.

Outfall018_20170218_Comp (440-177395-1)

Method(s) PrecSep-7: Strontium 90 Prep Batch: 160-295967

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: During the barium clean up portion of the into in-growth process a deviation occurred, whereas, following the addition of 10 milliliters sodium sulfate and m-cresol purple, 5 milliliters of sodium chromate was added before the addition of sodium hydroxide. To correct this mistake, three milliliters of sodium hydroxide was added as well as about 1.5 milliliters of sodium chromate. Barium pellets formed in all samples and were moved into in-growth. Outfall018_20170218_Comp (440-177395-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	2.67		1.31	1.34	3.00	1.74	pCi/L	03/16/17 09:14	03/19/17 20:28	1
Gross Beta	2.85		0.802	0.851	4.00	0.999	pCi/L	03/16/17 09:14	03/19/17 20:28	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-1.47	U	10.9	10.9	20.0	19.1	pCi/L	02/23/17 14:59	02/24/17 14:07	1
Potassium-40	0.642	U	124	124		185	pCi/L	02/23/17 14:59	02/24/17 14:07	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.270		0.122	0.125	1.00	0.121	pCi/L	02/24/17 10:49	03/20/17 20:29	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	55.2		40 - 110					02/24/17 10:49	03/20/17 20:29	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.741		0.448	0.453	1.00	0.682	pCi/L	02/24/17 11:31	03/11/17 14:44	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ba Carrier	55.2		40 - 110					02/24/17 11:31	03/11/17 14:44	1
Y Carrier	80.4		40 - 110					02/24/17 11:31	03/11/17 14:44	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0409	U	0.374	0.374	3.00	0.660	pCi/L	03/03/17 14:30	03/13/17 10:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	80.0		40 - 110					03/03/17 14:30	03/13/17 10:32	1
Y Carrier	95.3		40 - 110					03/03/17 14:30	03/13/17 10:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-25.2	U	157	157	500	287	pCi/L	03/17/17 10:22	03/17/17 18:18	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.257		0.169	0.170	1.00	0.148	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.8		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	297435	03/16/17 09:14	MRB	TAL SL
Total/NA	Analysis	900.0		1			298250	03/19/17 20:28	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	294302	02/23/17 14:59	R1S	TAL SL
Total/NA	Analysis	901.1		1			294377	02/24/17 14:07	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.25 mL	1.0 g	294401	02/24/17 10:49	PJM	TAL SL
Total/NA	Analysis	903.0		1			298257	03/20/17 20:29	MLK	TAL SL
Total/NA	Prep	PrecSep_0			1000.25 mL	1.0 g	294407	02/24/17 11:31	PJM	TAL SL
Total/NA	Analysis	904.0		1			297297	03/11/17 14:44	RTM	TAL SL
Total/NA	Prep	PrecSep-7			500.45 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297320	03/13/17 10:32	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.1 mL	1.0 g	298177	03/17/17 10:22	JDL	TAL SL
Total/NA	Analysis	906.0		1			298541	03/17/17 18:18	ALD	TAL SL
Total/NA	Prep	ExtChrom			499.88 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298112	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-297435/1-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 297435

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.063		0.626	0.637	3.00	0.845	pCi/L	03/13/17 10:59	03/19/17 20:23	1
Gross Beta	0.8151	U	0.562	0.568	4.00	0.846	pCi/L	03/13/17 10:59	03/19/17 20:23	1

Lab Sample ID: LCS 160-297435/2-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Alpha	49.9	46.87		6.72	3.00	1.36	pCi/L	94	73 - 133

Lab Sample ID: LCSB 160-297435/3-A
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec.
				Uncert. (2σ+/-)					Limits
Gross Beta	91.0	88.39		9.38	4.00	1.18	pCi/L	97	75 - 125

Lab Sample ID: 440-177394-A-1-O MS
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Alpha	4.56		49.9	42.67		6.65	3.00	1.72	pCi/L	76	60 - 140

Lab Sample ID: 440-177394-A-1-P MSD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec.	RER	Limit
						Uncert. (2σ+/-)					Limits	RER	Limit
Gross Alpha	4.56		49.9	40.08		6.04	3.00	1.36	pCi/L	71	60 - 140	0.20	1

Lab Sample ID: 440-177394-A-1-Q MSBT
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total	RL	MDC	Unit	%Rec	%Rec.
						Uncert. (2σ+/-)					Limits
Gross Beta	4.20		91.0	94.20		9.96	4.00	0.976	pCi/L	99	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-177394-A-1-R MSBTD
Matrix: Water
Analysis Batch: 298250

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 297435

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	4.20		91.0	92.44		9.78	4.00	1.02	pCi/L	97	60 - 140	0.09	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-294302/1-A
Matrix: Water
Analysis Batch: 294390

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294302

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.777	U	8.94	8.94	20.0	15.3	pCi/L	02/23/17 14:59	02/24/17 13:06	1
Potassium-40	1.292	U	113	113		166	pCi/L	02/23/17 14:59	02/24/17 13:06	1

Lab Sample ID: LCS 160-294302/2-A
Matrix: Water
Analysis Batch: 294377

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	139000		16100		440	pCi/L	102	90 - 111
Cesium-137	47000	48010		4780	20.0	148	pCi/L	102	90 - 111
Cobalt-60	39700	39430		3900		100	pCi/L	99	89 - 110

Lab Sample ID: 440-177392-G-1-B DU
Matrix: Water
Analysis Batch: 294727

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 294302

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	4.49	U	0.4834	U	9.62	20.0	17.1	pCi/L	0.21	1
Potassium-40	-23.3	U	-57.84	U	110		176	pCi/L	0.17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-294401/1-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294401

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1011		0.0693	0.0699	1.00	0.0920	pCi/L	02/24/17 10:49	03/20/17 20:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110					02/24/17 10:49	03/20/17 20:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-294401/2-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Radium-226	11.4	10.72		1.12	1.00	0.112	pCi/L	94	68 - 137	
Carrier	%Yield	LCS Qualifier	Limits							
Ba Carrier	89.7		40 - 110							

Lab Sample ID: LCSD 160-294401/3-A
Matrix: Water
Analysis Batch: 298257

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294401

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.4	11.08		1.15	1.00	0.0841	pCi/L	98	68 - 137	0.16	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-294407/1-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 294407

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.03249	U	0.238	0.238	1.00	0.431	pCi/L	02/24/17 11:31	03/11/17 14:43	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	86.7		40 - 110							
Y Carrier	83.7		40 - 110							
								Prepared	Analyzed	Dil Fac
								02/24/17 11:31	03/11/17 14:43	1
								02/24/17 11:31	03/11/17 14:43	1

Lab Sample ID: LCS 160-294407/2-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	13.59		1.49	1.00	0.394	pCi/L	99	56 - 140
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	89.7		40 - 110						
Y Carrier	86.4		40 - 110						

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-294407/3-A
Matrix: Water
Analysis Batch: 297297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 294407

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	13.7	13.97		1.51	1.00	0.370	pCi/L	102	56 - 140	0.13	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	90.9		40 - 110								
Y Carrier	87.5		40 - 110								

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1
Carrier	%Yield	MB Qualifier	Limits							
Sr Carrier	77.8		40 - 110							
Y Carrier	97.2		40 - 110							

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Sr Carrier	88.0		40 - 110						
Y Carrier	100		40 - 110						

Lab Sample ID: 440-177394-A-1-I MS
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	0.349	U	17.0	16.00		1.68	3.00	0.597	pCi/L	94	19 - 150
Carrier	%Yield	MS Qualifier	Limits								
Sr Carrier	80.3		40 - 110								
Y Carrier	104		40 - 110								

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-177394-A-1-J MSD
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.349	U	17.0	18.35		1.90	3.00	0.573	pCi/L	108	19 - 150	0.66	1
MSD MSD													
Carrier	%Yield	Qualifier	Limits										
Sr Carrier	80.2		40 - 110										
Y Carrier	97.2		40 - 110										

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298177/1-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298177

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	90.99	U	171	172	500	294	pCi/L	03/17/17 10:22	03/17/17 16:25	1

Lab Sample ID: LCS 160-298177/2-A
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2807		423	500	288	pCi/L	96	74 - 114

Lab Sample ID: 440-177394-B-1-B MS
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-31.1	U	2940	2843		425	500	287	pCi/L	97	67 - 130

Lab Sample ID: 440-177394-B-1-C MSD
Matrix: Water
Analysis Batch: 298541

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298177

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-31.1	U	2940	3041		448	500	294	pCi/L	103	67 - 130	0.23	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	MB MB		Limits			Prepared	Analyzed	Dil Fac		
%Yield	Qualifier									
Uranium-232	73.2		30 - 110			03/09/17 12:44	03/16/17 23:27	1		

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121
Tracer	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
%Yield	Qualifier								
Uranium-232	89.4		30 - 110						

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143
Tracer	MS MS		Limits			Prepared	Analyzed	Dil Fac			
%Yield	Qualifier										
Uranium-232	63.1		30 - 110								

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1
Tracer	MSD MSD		Limits			Prepared	Analyzed	Dil Fac					
%Yield	Qualifier												
Uranium-232	81.8		30 - 110										

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-G MS

Matrix: Water

Analysis Batch: 298118

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MS	MS	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
	Result	Qual		Result	Qual						
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143
MS MS											
Tracer	%Yield	Qualifier	Limits								
Uranium-232	74.3		30 - 110								

Lab Sample ID: 440-178167-M-1-H MSD

Matrix: Water

Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

Analyte	Sample	Sample	Spike Added	MSD	MSD	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	Limit
	Result	Qual		Result	Qual								
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1
MSD MSD													
Tracer	%Yield	Qualifier	Limits										
Uranium-232	89.0		30 - 110										

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Rad

Prep Batch: 294302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-294302/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-294302/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-177392-G-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 294401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	PrecSep-21	
MB 160-294401/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-294401/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-294401/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 294407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	PrecSep_0	
MB 160-294407/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-294407/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-294407/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-177394-A-1-I MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-177394-A-1-J MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 297435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	Evaporation	
MB 160-297435/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-297435/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-297435/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-177394-A-1-O MS	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-P MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-177394-A-1-Q MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-177394-A-1-R MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 298177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total/NA	Water	LSC_Dist_Susp	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Rad (Continued)

Prep Batch: 298177 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 160-298177/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298177/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-B MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-177394-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



440-177395 Chain of Custody

CHAIN OF CUSTODY FORM

Test America

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 018 Comp</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>
<p>Test America Contract: Urvashi Patel 17461 Deitan Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p>		<p>Total Recoverable Metals: Mercury (E245.1) 2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP alpha-BHC (E608) Armonia-N (350.2) TSS (180.2 (SM2540D)) Turbidity, TDS (SM2540C/E180.1) Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300) Surfactants (MBAS) (SM540C/E425.1) (E405.1 (SM5210B, BODCalc)) BOD5 (20 degrees C) TCDD (and all congeners) (E1613B)</p>		
<p>Sampler: Dan Smith - Roy Barajas</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se</p>		<p>48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity</p>
<p>Sample Description</p>		<p>Container Type</p>		<p>Preservative</p>		
<p>Outfall 018</p>		<p>500 mL Poly</p>		<p>HNO3</p>		<p>Hold Hold Hold Hold</p>
<p>Outfall 018, 20170218_Comp</p>		<p>1 L Glass Amber</p>		<p>None</p>		
<p>Outfall 018, 20170218_Comp Extra</p>		<p>500 mL Poly</p>		<p>None</p>		<p>Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: _____ 48 Hour: _____ 5 Day: _____ Normal: _____</p>
<p>Company: VHA</p>		<p>Company: VHA</p>		<p>Company: VHA</p>		
<p>Company: VHA</p>		<p>Company: VHA</p>		<p>Company: VHA</p>		

0-9 11-2 0-8 11-1 18-508



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177395-2

Login Number: 177395

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177395-2

Login Number: 177395

List Number: 2

Creator: Daniels, Brian J

List Source: TestAmerica St. Louis

List Creation: 02/22/17 01:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)
440-177395-1	Outfall018_20170218_Comp	55.2
LCS 160-294401/2-A	Lab Control Sample	89.7
LCSD 160-294401/3-A	Lab Control Sample Dup	90.9
MB 160-294401/1-A	Method Blank	86.7

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
440-177395-1	Outfall018_20170218_Comp	55.2	80.4
LCS 160-294407/2-A	Lab Control Sample	89.7	86.4
LCSD 160-294407/3-A	Lab Control Sample Dup	90.9	87.5
MB 160-294407/1-A	Method Blank	86.7	83.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)
440-177394-A-1-I MS	Matrix Spike	80.3	104
440-177394-A-1-J MSD	Matrix Spike Duplicate	80.2	97.2
440-177395-1	Outfall018_20170218_Comp	80.0	95.3
LCS 160-295967/2-A	Lab Control Sample	88.0	100
MB 160-295967/1-A	Method Blank	77.8	97.2

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-177394-A-1-L MS	Matrix Spike	63.1
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8
440-177395-1	Outfall018_20170218_Comp	83.8
440-178167-M-1-G MS	Matrix Spike	74.3
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

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DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-177395-4

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

April 13, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-177395-4

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170218_ Comp	440-177395-1	N/A	Water	2/18/17 12:40 PM	E200.8
Outfall018_20170218_ Comp_F	440-177395-3	N/A	Water	2/18/17 12:40 PM	E200.8



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-177395-4:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklists, custody seals were intact on the coolers at TA-Irvine.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



IV. METHOD 200.8— METALS

Marcia Hilchey of MEC^X reviewed the SDG on April 9, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Method 200.8* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for zinc, was met with the following exception. Sample Outfall018_20170218_Comp_F was required to be filtered and preserved within 24 hours of receipt at the laboratory; however, the sample was filtered and preserved for metals analysis 3 days after receipt. The result for dissolved zinc was qualified as estimated (UJ).

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for zinc were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for all CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with the analysis of total zinc; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA and ICSAB associated with analysis of total zinc; this review is based on summary data for those ICSA and ICSAB analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.



IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on samples Outfall018_20170218_Comp and Outfall018_20170218_Comp_F. Results were not assessed when the parent sample concentration exceeded the spike amount by 4x. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401773954

Analysis Method *E200.8*

Sample Name Outfall018_20170218_Comp_F **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	UJ	H

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Zinc	T	7440-66-6	20	20	10	ug/L			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-177395-4

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 10:32:52 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 10:32:52 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-177395-1	Outfall018_20170218_Comp	Water	02/18/17 12:40	02/18/17 18:40
440-177395-3	Outfall018_20170218_Comp_F	Water	02/18/17 12:40	02/18/17 18:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Job ID: 440-177395-4

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-177395-4

Comments

200.7 metals analyzed by 200.8 with 200.7 RLs.

Receipt

The samples were received on 2/18/2017 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1° C and 1.2° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): Outfall018_20170218_Comp_Extra (440-177395-2). Received #2 not listed on coc.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	20		20	10	ug/L		02/22/17 21:11	02/26/17 11:28	1

Client Sample ID: Outfall018_20170218_Comp_F

Lab Sample ID: 440-177395-3

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		02/23/17 15:59	02/27/17 15:24	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Method	Method Description	Protocol	Laboratory
200.8	Metals (ICP/MS)	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Client Sample ID: Outfall018_20170218_Comp

Lab Sample ID: 440-177395-1

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	200.2			25 mL	25 mL	389977	02/22/17 21:11	CDH	TAL IRV
Total Recoverable	Analysis	200.8		1			390652	02/26/17 11:28	RC	TAL IRV

Client Sample ID: Outfall018_20170218_Comp_F

Lab Sample ID: 440-177395-3

Date Collected: 02/18/17 12:40

Matrix: Water

Date Received: 02/18/17 18:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	389636	02/21/17 15:53	ZEM	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	390172	02/23/17 15:59	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			390847	02/27/17 15:24	RC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-389977/1-A
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/22/17 21:11	02/26/17 11:24	1

Lab Sample ID: LCS 440-389977/2-A
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	75.7		ug/L		95	85 - 115

Lab Sample ID: 440-177395-1 MS
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Outfall018_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	19.8		80.0	95.6		ug/L		95	70 - 130

Lab Sample ID: 440-177395-1 MSD
Matrix: Water
Analysis Batch: 390652

Client Sample ID: Outfall018_20170218_Comp
Prep Type: Total Recoverable
Prep Batch: 389977

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	19.8		80.0	93.1		ug/L		92	70 - 130	3	20

Lab Sample ID: MB 440-389636/1-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 390172

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		02/23/17 15:59	02/27/17 14:41	1

Lab Sample ID: LCS 440-389636/2-B
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	76.8		ug/L		96	85 - 115

Lab Sample ID: 440-177395-3 MS
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall018_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	7.03		80.0	81.7		ug/L		93	70 - 130

Lab Sample ID: 440-177395-3 MSD
Matrix: Water
Analysis Batch: 390847

Client Sample ID: Outfall018_20170218_Comp_F
Prep Type: Dissolved
Prep Batch: 390172

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	7.03		80.0	85.0		ug/L		97	70 - 130	4	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Metals

Filtration Batch: 389636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	FILTRATION	
MB 440-389636/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
440-177395-3 MS	Outfall018_20170218_Comp_F	Dissolved	Water	FILTRATION	
440-177395-3 MSD	Outfall018_20170218_Comp_F	Dissolved	Water	FILTRATION	

Prep Batch: 389977

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total Recoverable	Water	200.2	
MB 440-389977/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-389977/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-177395-1 MS	Outfall018_20170218_Comp	Total Recoverable	Water	200.2	
440-177395-1 MSD	Outfall018_20170218_Comp	Total Recoverable	Water	200.2	

Prep Batch: 390172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	200.2	389636
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.2	389636
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.2	389636
440-177395-3 MS	Outfall018_20170218_Comp_F	Dissolved	Water	200.2	389636
440-177395-3 MSD	Outfall018_20170218_Comp_F	Dissolved	Water	200.2	389636

Analysis Batch: 390652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-1	Outfall018_20170218_Comp	Total Recoverable	Water	200.8	389977
MB 440-389977/1-A	Method Blank	Total Recoverable	Water	200.8	389977
LCS 440-389977/2-A	Lab Control Sample	Total Recoverable	Water	200.8	389977
440-177395-1 MS	Outfall018_20170218_Comp	Total Recoverable	Water	200.8	389977
440-177395-1 MSD	Outfall018_20170218_Comp	Total Recoverable	Water	200.8	389977

Analysis Batch: 390847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-177395-3	Outfall018_20170218_Comp_F	Dissolved	Water	200.8	390172
MB 440-389636/1-B	Method Blank	Dissolved	Water	200.8	390172
LCS 440-389636/2-B	Lab Control Sample	Dissolved	Water	200.8	390172
440-177395-3 MS	Outfall018_20170218_Comp_F	Dissolved	Water	200.8	390172
440-177395-3 MSD	Outfall018_20170218_Comp_F	Dissolved	Water	200.8	390172

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Qualifiers

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-177395-4

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

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CHAIN OF CUSTODY FORM



440-177395 Chain of Custody

<p>Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108</p>		<p>Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall 001, 002, 011, 018 Outfall 018 Comp</p>		<p>ANALYSIS REQUIRED</p>		<p>Comments</p>						
<p>Test America Contract: Urvashi Patel 17461 Dorian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055</p>		<p>Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)</p>		<p>Total Recoverable Metals: (E200.7); Zn (E200.8); Cu, Pb, Cd, Se (E200.9); TCDD (and all congeners) (E1613B) X BOD5 (20 degrees C) (E406.1) (SMS210B, BODCalc) X Surfactants (MBS) (SMS540C/E425.1) X Cl-, SO4, Nitrate-N, Nitrite-N, NO3+NO2-N, Perchlorate (E300) X Turbidity, TDS (SMS240C/E180.1) X TSS (180.2) (SMS240D) X Ammonia-N (350.2) X alpha-BHC (E608) X 2,4,6-TCP, 2,4-Dinitrotoluene, Bis(2-ethylhexyl)phthalate, NDMA, TCP (SVOCs E625) X Total Recoverable Metals: Mercury (E245.1) X</p>			<p>48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity Sample packing DO NOT OPEN BAC. Bag to be opened in Mercury Prep using clean procedures.</p>					
<p>Sampler: Dan Smith - Roy Barajas</p>		<p>Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)</p>		<p>48 hours Holding Time NO3 & NO2 48 hour holding time for turbidity Sample packing DO NOT OPEN BAC. Bag to be opened in Mercury Prep using clean procedures.</p>		<p>Hold Hold Hold Hold</p>						
<p>Sample Description</p>	<p>Sample I.D.</p>	<p>Sampling Date/Time</p>	<p>Sample Matrix</p>	<p>Container Type</p>	<p># of Cont.</p>		<p>Preservative</p>	<p>Bottle #</p>	<p>M/MS/D</p>	<p>Received By</p>	<p>Date/Time</p>	<p>Company</p>
<p>Outfall 018</p>	<p>Outfall018_20170218_Comp</p>	<p>2/18/2017 10:40</p>	<p>WM</p>	<p>500 mL Poly</p>	<p>1</p>	<p>HNO3</p>	<p>90</p>	<p>No</p>	<p>Collected from Metals Waste</p>	<p>2/18/2017 19:00</p>	<p>VHA</p>	<p>Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months. Data Requirements: (Check) No Level IV: _____ X All Level IV: _____ X</p>
<p>Outfall 018</p>	<p>Outfall018_20170218_Comp Beta</p>	<p>2/18/2017 10:40</p>	<p>WM</p>	<p>500 mL Poly</p>	<p>2</p>	<p>None</p>	<p>170</p>	<p>No</p>	<p>Collected from Metals Waste</p>	<p>2/18/2017 19:00</p>	<p>VHA</p>	<p>Sample Integrity: (Check) Intact: _____ On Ice: _____ Store samples for 6 months. Data Requirements: (Check) No Level IV: _____ X All Level IV: _____ X</p>

0-9/11-2 0-8/11-1 18-SCU



CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall (001, 002, 011, 018) Outfall 018 Comp		Project Manager: Katherine Miller 520.289.8608, 520.904.6844 (cell) Field Manager: Mark Dominick 618.350.7312, 618.599.0702 (cell)		Comments: Filter and preserve with 24hrs of receipt at lab. Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.				
Test America Contact: Urvasi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc. its subsidiaries and affiliates, and TestAmerica Laboratories Inc.		Total Dissolved Metals: (E200.7) Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E908.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0, K-40, Cs-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)		Unfiltered and unpreserved analyte. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year				
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED	Comments
Outfall 018	Outfall018_20170218_Comp_F	2/18/2017/1240	WM	1L Poly	1	None	200	No	X	
			WM	borosilicate vials	1	None	320	No		
			WM	500 ml. Poly	1	NaOH	220	No		
			WM	2.5 Gal Cube	1	None	225	No	X	
			WM	1 L Glass Amber	1	None	230	No		
			WM	4-Gal-Cube	6	None	235	NA	X	Not collected

Relinquished By: <i>[Signature]</i>	Date/Time: 02/18/17	Company: VHA	Received By: <i>[Signature]</i>	Date/Time: 2.18.17 8:00 AM	Turn-around time: (Check) 24 Hour: ___ 72 Hour: ___ 10 Day: <input checked="" type="checkbox"/> 48 Hour: ___ 5 Day: ___ Normal: ___
Relinquished By: <i>[Signature]</i>	Date/Time: 2.18.17 10:40	Company:	Received By: <i>[Signature]</i>	Date/Time: 2.18.17 10:40	Sample integrity: (Check) Intact: ___ On Ice: ___ Store samples for 6 months: ___ Data Requirements: (Check) No Level IV: ___ All Level IV: <input checked="" type="checkbox"/>



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-177395-4

Login Number: 177395

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-178120-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 29, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-178120-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170226_Grab	440-178120-1	N/A	Water	2/26/17 10:00 AM	E120.1, E1664, E624, SM2540F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-178120-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 624—VOLATILE ORGANIC COMPOUNDS (VOCs)

L. Calvin of MEC^X reviewed the SDG on March 31, 2017

The samples listed in Table 1 for this analysis were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Volatile Organics (DVP-2, Rev. 2)*, EPA Method 624, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

III.1. HOLDING TIMES

Analytical holding times were met. The preserved water samples were analyzed within 14 days of collection.

III.2. GC/MS TUNING AND CALIBRATION

The BFB tunes met the method abundance criteria. The sample was analyzed within 12 hours of the BFB injection time.

Calibration criteria were met. The initial calibration average RRFs and the ICV and continuing calibration RRFs were ≥ 0.05 for all applicable target compounds. The initial calibration %RSDs were $\leq 35\%$, or r^2 values ≥ 0.990 . The second source ICV and all applicable CCV recoveries were within the method control limits.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

III.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

III.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the site sample from this SDG. MEC^X evaluated method accuracy based on the LCS results.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.4.1. TRIP BLANKS

Sample TB-20170226 was identified as the trip blank associated with the site sample in this SDG. The trip blank had no target compounds detected above the MDL. The laboratory reported 1,1-dichloroethane rather than 1,1-dichloroethene. Review of the raw data indicated no detects for either compound.

III.4.2. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.



III.4.3. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the continuing calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

III.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for target compounds 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene by Method 624. Review of the sample chromatograms, retention times, and spectra indicated no issues with target compound identification.

III.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

III.8. TENTATIVELY IDENTIFIED COMPOUNDS

The laboratory did not report TICs for this SDG.

III.9. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

IV. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^X reviewed the SDG on March 29, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540F*, *EPA methods 1664A and 120.1* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 7 days for settleable solids
- 28 days for HEM; oil and grease
- 28 days for specific conductance

IV.2. CALIBRATION

Calibration criteria were met. Batch notes indicated that the analytical balance calibration was verified before and after each HEM sample weighing. No instrument calibration information was provided for specific conductance analysis.



IV.1. QUALITY CONTROL SAMPLES

IV.1.1. METHOD BLANKS

The method blanks had no detects for HEM (Oil and Grease) or specific conductance. The method blank is not applicable to settleable solids.

IV.1.2. LABORATORY CONTROL SAMPLES

Recoveries for HEM were within the method control limits of 78-114% and the LCS/LCSD RPD was $\leq 11\%$. The LCS recovery for specific conductance met the laboratory control limits of 90-110%.

IV.1.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

IV.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.2. SAMPLE RESULT VERIFICATION

Calculations were verified and the HEM and settleable solids sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

It should be noted that no sample raw data was presented in the SDG for specific conductance or settleable solids analyses; no sample results were qualified.

IV.3. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

IV.3.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.3.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401781201

Analysis Method E120.1

Sample Name Outfall018_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-178120-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Specific Conductance	N	CONDSPEC	340	1.0	1.0	umhos/c			

Analysis Method E1664

Sample Name Outfall018_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-178120-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Oil and Grease (HEM), Total	N	HEMOILGREAS E	ND	5.4	1.5	mg/L	U	U	

Analysis Method E624

Sample Name Outfall018_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-178120-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,1-Dichloroethene	N	75-35-4	ND	0.50	0.25	ug/L	U	U	
1,2-Dichloroethane	N	107-06-2	ND	0.50	0.25	ug/L	U	U	
Trichloroethene	N	79-01-6	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2540F

Sample Name Outfall018_20170226_Grab Matrix Type: WM Result Type: TRG

Sample Date: 2/26/2017 10:00:00 AM Validation Level: 8

Lab Sample Name: 440-178120-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Settleable solids	N	SETTLEABLSO LIDS	ND	0.10	0.10	ml/l/hr	U	U	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178120-1

Client Project/Site: Routine Outfall 018 Grab

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/13/2017 10:45:37 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/13/2017 10:45:37 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178120-1	Outfall018_20170226_Grab	Water	02/26/17 10:00	02/27/17 07:50
440-178120-3	TB-20170226	Water	02/26/17 10:00	02/27/17 07:50

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Job ID: 440-178120-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-178120-1**

Comments

No additional comments.

Receipt

The samples were received on 2/27/2017 7:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.8° C, 1.9° C and 2.0° C.

GC/MS VOA

Method(s) 624, 8260B: The method blank for analytical batch 440-391545 contained Methylene Chloride above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 1664A: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-392669 and analytical batch 440-392721. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Client Sample ID: Outfall018_20170226_Grab

Lab Sample ID: 440-178120-1

Date Collected: 02/26/17 10:00

Matrix: Water

Date Received: 02/27/17 07:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 15:24	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 15:24	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 15:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.4	1.5	mg/L		03/08/17 06:54	03/08/17 06:54	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	340		1.0	1.0	umhos/cm			03/02/17 08:49	1
Settleable Solids	ND		0.10	0.10	mL/L/Hr			02/27/17 16:01	1

Client Sample ID: TB-20170226

Lab Sample ID: 440-178120-3

Date Collected: 02/26/17 10:00

Matrix: Water

Date Received: 02/27/17 07:50

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 15:50	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 15:50	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 15:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120		03/02/17 15:50	1
Dibromofluoromethane (Surr)	100		76 - 132		03/02/17 15:50	1
Toluene-d8 (Surr)	110		80 - 128		03/02/17 15:50	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
120.1	Conductivity, Specific Conductance	MCAWW	TAL IRV
1664A	HEM and SGT-HEM	1664A	TAL IRV
SM 2540F	Solids, Settleable	SM	TAL IRV

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Client Sample ID: Outfall018_20170226_Grab

Lab Sample ID: 440-178120-1

Date Collected: 02/26/17 10:00

Matrix: Water

Date Received: 02/27/17 07:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391545	03/02/17 15:24	RM	TAL IRV
Total/NA	Analysis	120.1		1			391564	03/02/17 08:49	XL	TAL IRV
Total/NA	Prep	1664A			923 mL	1000 mL	392669	03/08/17 06:54	L1A	TAL IRV
Total/NA	Analysis	1664A		1			392721	03/08/17 06:54	L1A	TAL IRV
Total/NA	Analysis	SM 2540F		1	1000 mL	1000 mL	390841	02/27/17 16:01	ST	TAL IRV

Client Sample ID: TB-20170226

Lab Sample ID: 440-178120-3

Date Collected: 02/26/17 10:00

Matrix: Water

Date Received: 02/27/17 07:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	391545	03/02/17 15:50	RM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-391545/4
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 09:15	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/02/17 09:15	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/02/17 09:15	1
Trichloroethene	ND		0.50	0.25	ug/L			03/02/17 09:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		80 - 120		03/02/17 09:15	1
Dibromofluoromethane (Surr)	100		76 - 132		03/02/17 09:15	1
Toluene-d8 (Surr)	110		80 - 128		03/02/17 09:15	1

Lab Sample ID: LCS 440-391545/5
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	23.6		ug/L		94	70 - 130
1,1,1,2-Tetrachloroethane	25.0	25.4		ug/L		101	63 - 130
1,1,2-Trichloroethane	25.0	26.5		ug/L		106	70 - 130
1,1-Dichloroethane	25.0	24.5		ug/L		98	64 - 130
1,1-Dichloroethene	25.0	22.1		ug/L		89	70 - 130
1,2-Dichlorobenzene	25.0	26.7		ug/L		107	70 - 130
1,2-Dichloroethane	25.0	23.8		ug/L		95	57 - 138
1,2-Dichloropropane	25.0	24.7		ug/L		99	67 - 130
1,3-Dichlorobenzene	25.0	25.4		ug/L		102	70 - 130
1,4-Dichlorobenzene	25.0	26.2		ug/L		105	70 - 130
Benzene	25.0	24.1		ug/L		96	68 - 130
Bromoform	25.0	23.8		ug/L		95	60 - 148
Bromomethane	25.0	24.5		ug/L		98	64 - 139
Carbon tetrachloride	25.0	23.5		ug/L		94	60 - 150
Chlorobenzene	25.0	25.7		ug/L		103	70 - 130
Dibromochloromethane	25.0	24.7		ug/L		99	69 - 145
Chloroethane	25.0	25.4		ug/L		102	64 - 135
Chloroform	25.0	24.0		ug/L		96	70 - 130
Chloromethane	25.0	28.4		ug/L		114	47 - 140
cis-1,3-Dichloropropene	25.0	25.5		ug/L		102	70 - 133
Bromodichloromethane	25.0	24.3		ug/L		97	70 - 132
Ethylbenzene	25.0	25.5		ug/L		102	70 - 130
Methylene Chloride	25.0	24.0		ug/L		96	52 - 130
Tetrachloroethene	25.0	25.6		ug/L		103	70 - 130
Toluene	25.0	25.5		ug/L		102	70 - 130
trans-1,2-Dichloroethene	25.0	25.0		ug/L		100	70 - 130
trans-1,3-Dichloropropene	25.0	24.8		ug/L		99	70 - 132
Vinyl chloride	25.0	26.4		ug/L		105	59 - 133
Trichloroethene	25.0	24.5		ug/L		98	70 - 130
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	70 - 133
Naphthalene	25.0	23.9		ug/L		96	60 - 140

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-391545/5

Matrix: Water

Analysis Batch: 391545

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Surrogate	LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	99		76 - 132
Toluene-d8 (Surr)	108		80 - 128

Lab Sample ID: 440-178121-A-1 MS

Matrix: Water

Analysis Batch: 391545

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
				Result	Qualifier				
1,1,1-Trichloroethane	ND		25.0	25.2		ug/L		101	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	27.0		ug/L		108	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.8		ug/L		111	70 - 130
1,1-Dichloroethane	ND		25.0	26.2		ug/L		105	65 - 130
1,1-Dichloroethene	ND		25.0	23.7		ug/L		95	70 - 130
1,2-Dichlorobenzene	ND		25.0	27.0		ug/L		108	70 - 130
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	56 - 146
1,2-Dichloropropane	ND		25.0	26.3		ug/L		105	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.2		ug/L		109	70 - 130
1,4-Dichlorobenzene	ND		25.0	27.8		ug/L		111	70 - 130
Benzene	ND		25.0	25.6		ug/L		102	66 - 130
Bromoform	ND		25.0	24.8		ug/L		99	59 - 150
Bromomethane	ND		25.0	25.5		ug/L		102	62 - 131
Carbon tetrachloride	ND		25.0	25.2		ug/L		101	60 - 150
Chlorobenzene	ND		25.0	27.1		ug/L		108	70 - 130
Dibromochloromethane	ND		25.0	26.3		ug/L		105	70 - 148
Chloroethane	ND		25.0	27.2		ug/L		109	68 - 130
Chloroform	ND		25.0	25.8		ug/L		103	70 - 130
Chloromethane	ND		25.0	30.4		ug/L		122	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.6		ug/L		106	70 - 133
Bromodichloromethane	ND		25.0	25.8		ug/L		103	70 - 138
Ethylbenzene	ND		25.0	27.1		ug/L		108	70 - 130
Methylene Chloride	ND		25.0	24.7		ug/L		99	52 - 130
Tetrachloroethene	ND		25.0	27.5		ug/L		110	70 - 137
Toluene	ND		25.0	27.3		ug/L		109	70 - 130
trans-1,2-Dichloroethene	ND		25.0	26.2		ug/L		105	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	70 - 138
Vinyl chloride	ND		25.0	27.9		ug/L		112	50 - 137
Trichloroethene	0.56		25.0	26.4		ug/L		103	70 - 130
cis-1,2-Dichloroethene	1.5		25.0	26.9		ug/L		101	70 - 130
Naphthalene	ND		25.0	25.7		ug/L		103	60 - 140

Surrogate	MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	102		76 - 132
Toluene-d8 (Surr)	109		80 - 128

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-178121-A-1 MSD
Matrix: Water
Analysis Batch: 391545

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.0		ug/L		100	70 - 130	1	20
1,1,2,2-Tetrachloroethane	ND		25.0	29.7		ug/L		119	63 - 130	10	30
1,1,2-Trichloroethane	ND		25.0	28.7		ug/L		115	70 - 130	3	25
1,1-Dichloroethane	ND		25.0	25.9		ug/L		104	65 - 130	1	20
1,1-Dichloroethene	ND		25.0	23.5		ug/L		94	70 - 130	1	20
1,2-Dichlorobenzene	ND		25.0	27.6		ug/L		110	70 - 130	2	20
1,2-Dichloroethane	ND		25.0	25.4		ug/L		102	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	26.3		ug/L		105	69 - 130	0	20
1,3-Dichlorobenzene	ND		25.0	26.8		ug/L		107	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	27.6		ug/L		111	70 - 130	1	20
Benzene	ND		25.0	25.3		ug/L		101	66 - 130	1	20
Bromoform	ND		25.0	26.8		ug/L		107	59 - 150	8	25
Bromomethane	ND		25.0	25.5		ug/L		102	62 - 131	0	25
Carbon tetrachloride	ND		25.0	24.7		ug/L		99	60 - 150	2	25
Chlorobenzene	ND		25.0	26.9		ug/L		107	70 - 130	1	20
Dibromochloromethane	ND		25.0	26.9		ug/L		107	70 - 148	2	25
Chloroethane	ND		25.0	26.9		ug/L		107	68 - 130	1	25
Chloroform	ND		25.0	25.5		ug/L		102	70 - 130	1	20
Chloromethane	ND		25.0	30.1		ug/L		120	39 - 144	1	25
cis-1,3-Dichloropropene	ND		25.0	26.6		ug/L		106	70 - 133	0	20
Bromodichloromethane	ND		25.0	25.4		ug/L		102	70 - 138	1	20
Ethylbenzene	ND		25.0	26.8		ug/L		107	70 - 130	1	20
Methylene Chloride	ND		25.0	24.3		ug/L		97	52 - 130	1	20
Tetrachloroethene	ND		25.0	27.4		ug/L		110	70 - 137	0	20
Toluene	ND		25.0	27.1		ug/L		108	70 - 130	1	20
trans-1,2-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130	1	20
trans-1,3-Dichloropropene	ND		25.0	26.7		ug/L		107	70 - 138	4	25
Vinyl chloride	ND		25.0	27.9		ug/L		112	50 - 137	0	30
Trichloroethene	0.56		25.0	26.1		ug/L		102	70 - 130	1	20
cis-1,2-Dichloroethene	1.5		25.0	26.5		ug/L		100	70 - 130	1	20
Naphthalene	ND		25.0	28.0		ug/L		112	60 - 140	9	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	100		76 - 132
Toluene-d8 (Surr)	108		80 - 128

Method: 120.1 - Conductivity, Specific Conductance

Lab Sample ID: MB 440-391564/3
Matrix: Water
Analysis Batch: 391564

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0 umhos/cm			03/02/17 08:49	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Method: 120.1 - Conductivity, Specific Conductance (Continued)

Lab Sample ID: LCS 440-391564/4
Matrix: Water
Analysis Batch: 391564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	768	764		umhos/cm		99	90 - 110

Lab Sample ID: 440-177874-C-2 DU
Matrix: Water
Analysis Batch: 391564

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	3200		3200		umhos/cm		0.9	5

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-392669/1-A
Matrix: Water
Analysis Batch: 392721

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392669

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	ND		5.0	1.4	mg/L		03/08/17 06:54	03/08/17 06:54	1

Lab Sample ID: LCS 440-392669/2-A
Matrix: Water
Analysis Batch: 392721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392669

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM (Oil & Grease)	40.0	35.9		mg/L		90	78 - 114

Lab Sample ID: LCSD 440-392669/3-A
Matrix: Water
Analysis Batch: 392721

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392669

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	40.0	34.3		mg/L		86	78 - 114	6	11

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

GC/MS VOA

Analysis Batch: 391545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178120-1	Outfall018_20170226_Grab	Total/NA	Water	624	
440-178120-3	TB-20170226	Total/NA	Water	624	
MB 440-391545/4	Method Blank	Total/NA	Water	624	
LCS 440-391545/5	Lab Control Sample	Total/NA	Water	624	
440-178121-A-1 MS	Matrix Spike	Total/NA	Water	624	
440-178121-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

General Chemistry

Analysis Batch: 390841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178120-1	Outfall018_20170226_Grab	Total/NA	Water	SM 2540F	

Analysis Batch: 391564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178120-1	Outfall018_20170226_Grab	Total/NA	Water	120.1	
MB 440-391564/3	Method Blank	Total/NA	Water	120.1	
LCS 440-391564/4	Lab Control Sample	Total/NA	Water	120.1	
440-177874-C-2 DU	Duplicate	Total/NA	Water	120.1	

Prep Batch: 392669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178120-1	Outfall018_20170226_Grab	Total/NA	Water	1664A	
MB 440-392669/1-A	Method Blank	Total/NA	Water	1664A	
LCS 440-392669/2-A	Lab Control Sample	Total/NA	Water	1664A	
LCSD 440-392669/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	

Analysis Batch: 392721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178120-1	Outfall018_20170226_Grab	Total/NA	Water	1664A	392669
MB 440-392669/1-A	Method Blank	Total/NA	Water	1664A	392669
LCS 440-392669/2-A	Lab Control Sample	Total/NA	Water	1664A	392669
LCSD 440-392669/3-A	Lab Control Sample Dup	Total/NA	Water	1664A	392669

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Grab

TestAmerica Job ID: 440-178120-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
624		Water	1,1-Dichloroethane
624		Water	1,1-Dichloroethene
624		Water	1,2-Dichloroethane
624		Water	Trichloroethene



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178120-1

Login Number: 178120

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-178168-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 31, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MECX Project No.:** 1272.003H.01**Sample Delivery Group:** 440-178168-1**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 2**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall018_20170227_Comp	440-178168-1	N/A	Water	2/27/17 8:10 AM	E1613B, E180.1, E200.8, E245.1, E300, E314.0, E608, E625, SM2540C/D, SM4500-CN-E, SM4500-NH3G, SM5210B, SM5540,
Outfall018_20170227_Comp_F	440-178168-3	N/A	Water	2/27/17 8:10 AM	E200.8, E245.1



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-178168-1:

- The laboratories received the samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the receipt checklist, custody seals were intact on the coolers at TA-Irvine.
- Samples for Method 1613B analysis were transferred to TA-Sacramento.

The following issue was noted:

- Corrections to the original COC were not initialed or dated.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^x reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for isomers 1,2,3,4,6,7,8-HpCDF, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, OCDD, and OCDF, and detects for all totals except PeCDD and TCDD. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising all total detects except HxCDF and HpCDD in the method blank were the same peaks comprising the totals in sample Outfall018_20170227_Comp. The results for totals HpCDF, HxCDD, PeCDF, and TCDF were qualified



as nondetected (U). The reviewer verified that peaks comprising totals HpCDD and HxCDF in the sample included more peaks than the method blank totals. The sample results for totals HpCDD and HxCDF were qualified as estimated (J).

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. All detected compounds met the ion abundance ratio, retention time window and signal to noise ratio criteria for identification except for those results flagged by the laboratory as EMPC values. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL.

A result previously qualified as a nondetect for method blank contamination was not further qualified as an estimated maximum possible concentration (EMPC). Total HxCDF containing an EMPC peak was qualified as estimated (J).



IV. EPA METHODS 200.8 AND 245.1 — METALS AND MERCURY

Marcia Hilchey of MEC^X reviewed the SDG on April 3, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *EPA Methods 200.8 and 245.1* and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the remaining metals, were met.

IV.2. MS TUNING AND CALIBRATION

Mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were $\leq 5\%$.

Calibration criteria were met. The initial calibration r values (when appropriate) were ≥ 0.995 , y -intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. The mercury initial (ICV) and continuing (CCV) recoveries were within NFG control limits of 85-115%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%. It should be noted that complete raw data was not provided for all CRQLs; this review is based on summary data for those CRQLs for which raw data was not reported.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blanks and calibration blanks. It should be noted that complete raw data was not provided for calibration blanks and the method blank associated with the analysis of total metals; this review is based on summary data for those blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES and ICP-MS ICSAB recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. All of the interferences were present in the site samples at concentrations less than half that of the ICSA, therefore, the samples were not assessed for matrix interference. It should be noted that complete raw data was not provided for the ICSA associated with analysis of total metals, and the ICSAB associated with analysis of dissolved metals. This review is based on summary data for those ICSA and ICSAB analyses.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were performed on sample Outfall018_20170227_Comp for Method 245.1, and on sample Outfall018_20170227_Comp_F for Method 200.8. Results were not assessed when the parent sample concentration exceeded the spike amount by $4x$. Recoveries and RPDs were within the method control limits of 70-130% and $\leq 20\%$, respectively.



IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries were within 60-125% of the calibration blank.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data, except in cases noted above for which raw data was not provided. No transcription errors or calculation errors were noted. Nondetects are valid to the MDL.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD 608 – ALPHA BHC

L. Calvin of MEC^X reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibration had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$.

V.3. QUALITY CONTROL SAMPLES

V.3.1. METHOD BLANKS

The target compound was not detected in method blank.



V.3.2 LABORATORY CONTROL SAMPLES

Recoveries of alpha BHC and the RPD were within the laboratory control limits of 37-134% and $\leq 35\%$, respectively.

V.3.3 SURROGATE RECOVERY

Pesticide surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150% in the site sample.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS)/MS duplicate (MSD) analyses were not performed on the sample of this SDG. MEC^X evaluated method accuracy and precision based on LCS/LCSD results.

V.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no problems with target compound identification. The laboratory analyzed for alpha BHC by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibrations and the laboratory MDLs. The reported nondetect is valid to the reporting limit.

VI. EPA METHOD 314.0 — PERCHLORATE

Michael Cherny of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, EPA Method 314.0, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VI.1. HOLDING TIMES

The analytical holding time, 28 days, was met.



VI.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 value was ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110% and 85-115%, respectively. The MRL was recovered within the laboratory control limits of 75-125%. Interference check sample recovery was within the laboratory control limits of 80-120%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Method blanks and calibration blanks had no detects.

VI.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the method control limits of 85-115%.

VI.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike/matrix spike duplicate analyses were not performed on the sample from this SDG.

VI.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Reported nondetects are valid to the MDL.

VI.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VI.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VII. EPA METHOD 625 — SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^X reviewed the SDG on April 7, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Semivolatile Organics* (DVP-3, Rev. 1), *EPA Method 625*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

**VII.1. HOLDING TIMES**

Extraction and analytical holding times were met. The water sample was extracted within seven days of collection and analyzed within 30 days of extraction.

VII.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. Samples were analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and $\%RSD \leq 35\%$ or r^2 of ≥ 0.990 . The ICV and CCV RRFs were ≥ 0.05 and $\%Ds$ were within the method control limit of $\leq 20\%$.

VII.3. QUALITY CONTROL SAMPLES**VII.3.1. METHOD BLANKS**

Target compounds were not detected in the method blank.

VII.3.2. LABORATORY CONTROL SAMPLES

Recoveries were within the laboratory control limits.

VII.3.3. SURROGATE RECOVERY

Recoveries were within the laboratory control limits.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy based on the LCS results.

VII.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VII.4.1. FIELD BLANKS AND EQUIPMENT BLANKS:

Field blank or equipment blank samples were not identified for this SDG.

VII.4.2. FIELD DUPLICATES:

Field duplicate samples were not identified in this SDG.

VII.5. INTERNAL STANDARDS PERFORMANCE

The internal standard retention times and area counts were within the control limits established by the midpoint of the initial calibration standards: ± 30 seconds for retention times and $-50\%/+100\%$ for internal standard areas.

VII.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for five semivolatile target compounds by EPA Method 625: 2,4-dinitrotoluene, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, n-



nitrosodimethylamine, and pentachlorophenol. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VII.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VII.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VII.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VIII. VARIOUS METHODS — GENERAL CHEMISTRY

Michael Cherny of MEC^X reviewed the SDG on March 31, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *EPA Methods 180.1 and 300.0*, *Standard Methods for the Examination of Water and Wastewater 2540C, 2540D, 4500-NH₃-G, 4500-CN-E, 5210B, and 5540*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

VIII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 48 hours from collection for biochemical oxygen demand (BOD), nitrate/nitrite, surfactants as methylene blue active substances (MBAS), and turbidity
- 7 days for total dissolved solids (TDS)
- 7 days for total suspended solids (TSS)
- 14 days for total cyanide
- 28 days for ammonia, chloride, and sulfate

VIII.2. CALIBRATION

Calibration criteria were met. The initial calibration r^2 values, as appropriate, were ≥ 0.995 and all initial and continuing calibration recoveries were within 90-110%. The MRL recoveries for ammonia and MBAS were within the laboratory control limits of 10-200% and 50-150%, respectively. Analytical balance calibration logs were provided by the laboratory.

VIII.3. QUALITY CONTROL SAMPLES

VIII.3.1. METHOD BLANKS

The method blanks and calibration blanks had no detects.



VIII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recoveries were within the laboratory control limits. The RPDs for BOD and total cyanide were $\leq 20\%$ and $\leq 10\%$, respectively.

VIII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

VIII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

VIII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted. Detects between the MDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the MDL.

Sulfate in sample Outfall018_20170227_Comp was reported from a 20 \times dilution.

VIII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VIII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VIII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401781681

Analysis Method E1613B

Sample Name Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.0000019	0.00010	0.00000025	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000010	0.00010	0.00000028	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.00000056	0.000051	0.00000023	ug/L	J,DXMBq	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.0000014	0.000051	0.00000074	ug/L	J,DX	J	DNQ
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	ND	0.000051	0.00000035	ug/L	U	U	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000058	0.000051	0.00000021	ug/L	J,DXMBq	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	ND	0.000051	0.00000030	ug/L	U	U	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000033	0.000051	0.00000018	ug/L	J,DXMBq	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000057	0.000051	0.00000026	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000063	0.000051	0.00000017	ug/L	J,DX	J	DNQ
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.00000035	0.000051	0.00000023	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	ND	0.000051	0.00000018	ug/L	U	U	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	ND	0.000051	0.00000036	ug/L	Uq	U	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000040	0.000051	0.00000015	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000039	0.000051	0.00000020	ug/L	J,DXMB	U	B
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000012	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000027	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000022	0.000010	0.00000016	ug/L	J,DXMBq	R	D
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.00000056	0.000051	0.00000029	ug/L	J,DXMBq	U	B
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.0000014	0.000051	0.00000074	ug/L	J,DXMB	J	B, DNQ
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000019	0.000051	0.00000018	ug/L	J,DXMBq	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.00000092	0.000051	0.00000026	ug/L	J,DXMB	U	B

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.00000039	0.000051	0.00000019	ug/L	J,DXMB	U	B
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	ND	0.000051	0.00000036	ug/L	Uq	U	
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.00000022	0.000010	0.00000016	ug/L	J,DXMBq	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.0000022	ug/L	U	U	

Analysis Method E180.1

Sample Name	Outfall018_20170227_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/27/2017 8:10:00 AM		Validation Level:	8					
Lab Sample Name:	440-178168-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Turbidity	N	TURBIDITY	0.47	0.10	0.040	NTU			

Analysis Method E200.8

Sample Name	Outfall018_20170227_Comp		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/27/2017 8:10:00 AM		Validation Level:	8					
Lab Sample Name:	440-178168-1								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	T	7440-43-9	ND	1.0	0.25	ug/L	U	U	
Copper	T	7440-50-8	2.4	2.0	0.50	ug/L			
Lead	T	7439-92-1	ND	1.0	0.50	ug/L	U	U	
Selenium	T	7782-49-2	ND	2.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	ND	20	10	ug/L	U	U	

Sample Name	Outfall018_20170227_Comp_F		Matrix Type:	WM	Result Type:	TRG			
Sample Date:	2/27/2017 8:10:00 AM		Validation Level:	8					
Lab Sample Name:	440-178168-3								
Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cadmium	D	7440-43-9	ND	1.0	0.25	ug/L	UQP	U	
Copper	D	7440-50-8	2.0	2.0	0.50	ug/L	QP		
Lead	D	7439-92-1	ND	1.0	0.50	ug/L	UQP	U	
Selenium	D	7782-49-2	ND	2.0	0.50	ug/L	UQP	U	
Zinc	D	7440-66-6	ND	20	10	ug/L	UQP	U	

Analysis Method E245.1**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Sample Name Outfall018_20170227_Comp_F **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-3

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	D	7439-97-6	ND	0.20	0.10	ug/L	U	U	

Analysis Method E300**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chloride	N	16887-00-6	8.7	0.50	0.25	mg/L			
Nitrate (as N)	N	14797-55-8	1.0	0.11	0.055	mg/L			
Nitrite (as N)	N	14797-65-0	ND	0.15	0.070	mg/L	U	U	
Nitrite/Nitrate	N	NO2NO3	1.0	0.15	0.070	mg/L			
Sulfate	N	14808-79-8	72	10	5.0	mg/L			

Analysis Method E314.0**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Perchlorate	N	14797-73-0	ND	4.0	0.95	ug/L	U	U	

Analysis Method E608**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
alpha-BHC	N	319-84-6	ND	0.0051	0.0025	ug/L	U	U	

Analysis Method E625**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
2,4,6-Trichlorophenol	N	88-06-2	ND	0.995	0.498	ug/L	U	U	
2,4-Dinitrotoluene	N	121-14-2	ND	4.98	1.99	ug/L	U	U	
bis(2-Ethylhexyl)phthalate	N	117-81-7	ND	4.98	1.99	ug/L	U	U	
N-Nitrosodimethylamine	N	62-75-9	ND	1.99	0.995	ug/L	U	U	
Pentachlorophenol	N	87-86-5	ND	1.99	0.995	ug/L	U	U	

Analysis Method SM2540C**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Dissolved Solids (TDS)	N	TDS	230	10	5.0	mg/L			

Analysis Method SM2540D**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	ND	1.0	0.50	mg/L	U	U	

Analysis Method SM4500-CN-E**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cyanide	N	57-12-5	ND	5.0	2.5	ug/L	U	U	

Analysis Method SM4500-NH3G**Sample Name** Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG**Sample Date:** 2/27/2017 8:10:00 AM **Validation Level:** 8**Lab Sample Name:** 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Ammonia (as N)	N	7664-41-7N	0.108	0.200	0.100	mg/L	J,DX	J	DNQ

Analysis Method **SM5210B**

Sample Name Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Biochemical Oxygen Demand (BOD) N	N	BOD	1.2	2.0	0.50	mg/L	J,DX	J	DNQ

Analysis Method **SM5540**

Sample Name Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-178168-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Surfactants as MBAS	N	SURFASMBAS	0.056	0.10	0.050	mg/L	J,DX	J	DNQ

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Tel: (949)261-1022

TestAmerica Job ID: 440-178168-1

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/19/2017 6:44:29 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/19/2017 6:44:29 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178168-1	Outfall018_20170227_Comp	Water	02/27/17 08:10	02/27/17 17:45
440-178168-3	Outfall018_20170227_Comp_F	Water	02/27/17 08:10	02/27/17 17:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Job ID: 440-178168-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-178168-1

Comments

Zinc was reported with 200.7 RL under 200.8 method.

Receipt

The samples were received on 2/27/2017 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.9° C, 1.3° C and 1.6° C.

GC/MS Semi VOA

Method(s) 625: The recovery of surrogate 2-fluorobiphenyl failed below the lower acceptance limit for the laboratory control sample (LCS) of preparation batch 440-391393. The recovery of this surrogate has no impact upon the validity of the LCS. The spiked target analytes are used to monitor the efficiency of the LCS for the prep method and they are within acceptance limits. Thus, the sample data is unaffected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

Method(s) 300.0: Due to the high concentration of Chloride and Sulfate, the matrix spike / matrix spike duplicate (MS/MSD) for analytical batch 440-391014 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

Method(s) 245.1: The initial calibration verification (ICV) result for batch 440-392812 was above the upper control limit. Sample results were non-detects, and have been reported as qualified data.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		4.98	1.99	ug/L		03/01/17 14:38	03/05/17 01:40	1
2,4-Dinitrotoluene	ND		4.98	1.99	ug/L		03/01/17 14:38	03/05/17 01:40	1
N-Nitrosodimethylamine	ND		1.99	0.995	ug/L		03/01/17 14:38	03/05/17 01:40	1
Pentachlorophenol	ND		1.99	0.995	ug/L		03/01/17 14:38	03/05/17 01:40	1
2,4,6-Trichlorophenol	ND		0.995	0.498	ug/L		03/01/17 14:38	03/05/17 01:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	72		50 - 120	03/01/17 14:38	03/05/17 01:40	1
2-Fluorophenol	67		30 - 120	03/01/17 14:38	03/05/17 01:40	1
2,4,6-Tribromophenol	88		40 - 120	03/01/17 14:38	03/05/17 01:40	1
Nitrobenzene-d5	74		45 - 120	03/01/17 14:38	03/05/17 01:40	1
Terphenyl-d14	87		37 - 144	03/01/17 14:38	03/05/17 01:40	1
Phenol-d6	63		35 - 120	03/01/17 14:38	03/05/17 01:40	1

Method: 608 Pesticides - Organochlorine Pesticides Low level

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		0.0051	0.0025	ug/L		02/28/17 05:30	03/01/17 19:02	1

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.7		0.50	0.25	mg/L			02/28/17 14:10	1
Nitrate as N	1.0		0.11	0.055	mg/L			02/28/17 14:10	1
Nitrite as N	ND		0.15	0.070	mg/L			02/28/17 14:10	1
Sulfate	72		10	5.0	mg/L			02/28/17 17:00	20

Method: 314.0 - Perchlorate (IC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/28/17 13:58	1

Method: NO3NO2 Calc - Nitrogen, Nitrate-Nitrite

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	1.0		0.15	0.070	mg/L			03/10/17 11:19	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,7,8-PeCDD	ND	q	0.000051	0.0000003	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,7,8-PeCDF	ND		0.000051	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1
2,3,4,7,8-PeCDF	0.00000039	J,DX MB	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,4,7,8-HxCDD	ND		0.000051	0.0000003	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,6,7,8-HxCDD	0.00000057	J,DX MB	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,7,8,9-HxCDD	0.00000035	J,DX MB	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,4,7,8-HxCDF	0.00000058	J,DX MB q	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,6,7,8-HxCDF	0.00000033	J,DX MB q	0.000051	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,7,8,9-HxCDF	0.0000063	J,DX	0.000051	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1
2,3,4,6,7,8-HxCDF	0.0000040	J,DX MB	0.000051	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,4,6,7,8-HpCDD	0.0000014	J,DX	0.000051	0.0000007	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,4,6,7,8-HpCDF	0.0000056	J,DX MB q	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
1,2,3,4,7,8,9-HpCDF	ND		0.000051	0.0000003	ug/L		03/07/17 08:58	03/12/17 23:30	1
OCDD	0.000010	J,DX MB	0.00010	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
OCDF	0.0000019	J,DX MB q	0.00010	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total TCDD	ND		0.000010	0.0000022	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total TCDF	0.0000022	J,DX MB q	0.000010	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total PeCDD	ND q		0.000051	0.0000003	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total PeCDF	0.0000039	J,DX MB	0.000051	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total HxCDD	0.0000092	J,DX MB	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total HxCDF	0.0000019	J,DX MB q	0.000051	0.0000001	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total HpCDD	0.0000014	J,DX MB	0.000051	0.0000007	ug/L		03/07/17 08:58	03/12/17 23:30	1
Total HpCDF	0.0000056	J,DX MB q	0.000051	0.0000002	ug/L		03/07/17 08:58	03/12/17 23:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	79		25 - 164	03/07/17 08:58	03/12/17 23:30	1
13C-2,3,7,8-TCDF	78		24 - 169	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,7,8-PeCDD	80		25 - 181	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,7,8-PeCDF	76		24 - 185	03/07/17 08:58	03/12/17 23:30	1
13C-2,3,4,7,8-PeCDF	75		21 - 178	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,4,7,8-HxCDD	79		32 - 141	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,6,7,8-HxCDD	94		28 - 130	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,4,7,8-HxCDF	73		26 - 152	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,6,7,8-HxCDF	81		26 - 123	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,7,8,9-HxCDF	74		29 - 147	03/07/17 08:58	03/12/17 23:30	1
13C-2,3,4,6,7,8-HxCDF	82		28 - 136	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,4,6,7,8-HpCDD	83		23 - 140	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,4,6,7,8-HpCDF	84		28 - 143	03/07/17 08:58	03/12/17 23:30	1
13C-1,2,3,4,7,8,9-HpCDF	76		26 - 138	03/07/17 08:58	03/12/17 23:30	1
13C-OCDD	86		17 - 157	03/07/17 08:58	03/12/17 23:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	87		35 - 197	03/07/17 08:58	03/12/17 23:30	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000012	ug/L		03/07/17 08:58	03/15/17 00:50	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDF	66		24 - 169	03/07/17 08:58	03/15/17 00:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	82		35 - 197	03/07/17 08:58	03/15/17 00:50	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/07/17 12:01	03/13/17 15:41	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 12:01	03/13/17 15:41	1
Copper	2.4		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:41	1
Lead	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:41	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:41	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/07/17 13:16	03/07/17 23:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	0.47		0.10	0.040	NTU			02/28/17 17:03	1
Total Dissolved Solids	230		10	5.0	mg/L			03/02/17 09:00	1
Total Suspended Solids	ND		1.0	0.50	mg/L			03/01/17 19:03	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/06/17 14:31	03/07/17 17:29	1
Ammonia (as N)	0.108	J,DX	0.200	0.100	mg/L			02/28/17 18:09	1
Methylene Blue Active Substances	0.056	J,DX	0.10	0.050	mg/L			02/27/17 20:04	1
Biochemical Oxygen Demand	1.2	J,DX	2.0	0.50	mg/L			02/27/17 21:00	1

Client Sample ID: Outfall018_20170227_Comp_F

Lab Sample ID: 440-178168-3

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Method: 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND	QP	20	10	ug/L		03/07/17 15:21	03/09/17 15:26	1
Cadmium	ND	QP	1.0	0.25	ug/L		03/07/17 15:21	03/09/17 15:26	1
Copper	2.0	QP	2.0	0.50	ug/L		03/07/17 15:21	03/09/17 15:26	1
Lead	ND	QP	1.0	0.50	ug/L		03/07/17 15:21	03/09/17 15:26	1
Selenium	ND	QP	2.0	0.50	ug/L		03/07/17 15:21	03/09/17 15:26	1

Method: 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/28/17 23:25	03/01/17 04:19	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method	Method Description	Protocol	Laboratory
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608 Pesticides	Organochlorine Pesticides Low level	40CFR136A	TAL IRV
300.0	Anions, Ion Chromatography	MCAWW	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
NO3NO2 Calc	Nitrogen, Nitrate-Nitrite	EPA	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
200.8	Metals (ICP/MS)	EPA	TAL IRV
245.1	Mercury (CVAA)	EPA	TAL IRV
180.1	Turbidity, Nephelometric	MCAWW	TAL IRV
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 4500 NH3 G	Ammonia	SM	TAL IRV
SM 5540C	Methylene Blue Active Substances (MBAS)	SM	TAL IRV
SM5210B	BOD, 5 Day	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	625			1005 mL	2.0 mL	391393	03/01/17 14:38	JC1	TAL IRV
Total/NA	Analysis	625		1			392070	03/05/17 01:40	P1P	TAL IRV
Total/NA	Prep	608			985 mL	2 mL	390698	02/28/17 05:30	L2A	TAL IRV
Total/NA	Analysis	608 Pesticides		1			391420	03/01/17 19:02	KS	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	391013	02/28/17 14:10	NTN	TAL IRV
Total/NA	Analysis	300.0		1	5 mL	1.0 mL	391014	02/28/17 14:10	NTN	TAL IRV
Total/NA	Analysis	300.0		20	5 mL	1.0 mL	391014	02/28/17 17:00	NTN	TAL IRV
Total/NA	Analysis	314.0		1			390759	02/28/17 13:58	CTH	TAL IRV
Total/NA	Analysis	NO3NO2 Calc		1			393228	03/10/17 11:19	TLN	TAL IRV
Total/NA	Prep	1613B			982 mL	20 uL	153547	03/07/17 08:58	GLB	TAL SAC
Total/NA	Analysis	1613B		1			154717	03/12/17 23:30	SMA	TAL SAC
Total/NA	Prep	1613B	RA		982 mL	20 uL	153547	03/07/17 08:58	GLB	TAL SAC
Total/NA	Analysis	1613B	RA	1			155037	03/15/17 00:50	KSS	TAL SAC
Total Recoverable	Prep	200.2			25 mL	25 mL	392459	03/07/17 12:01	Q1N	TAL IRV
Total Recoverable	Analysis	200.8		1			393721	03/13/17 15:41	RC	TAL IRV
Total/NA	Prep	245.1			20 mL	20 mL	392479	03/07/17 13:16	DB	TAL IRV
Total/NA	Analysis	245.1		1			392812	03/07/17 23:16	DB	TAL IRV
Total/NA	Analysis	180.1		1			391087	02/28/17 17:03	ST	TAL IRV
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	391570	03/02/17 09:00	XL	TAL IRV
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	391475	03/01/17 19:03	EC1	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	392271	03/06/17 14:31	SN	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			392591	03/07/17 17:29	SN	TAL IRV
Total/NA	Analysis	SM 4500 NH3 G		1	0.8 mL	8 mL	391180	02/28/17 18:09	EN	TAL IRV
Total/NA	Analysis	SM 5540C		1	100 mL	100 mL	390892	02/27/17 20:04	HTL	TAL IRV
Total/NA	Analysis	SM5210B		1			390824	02/27/17 21:00	MMP	TAL IRV

Client Sample ID: Outfall018_20170227_Comp_F

Lab Sample ID: 440-178168-3

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391091	02/28/17 14:45	JL	TAL IRV
Dissolved	Prep	200.2			25 mL	25 mL	392532	03/07/17 15:21	Q1N	TAL IRV
Dissolved	Analysis	200.8		1			393112	03/09/17 15:26	RC	TAL IRV
Dissolved	Filtration	FILTRATION			200 mL	200 mL	391091	02/28/17 14:45	JL	TAL IRV
Dissolved	Prep	245.1			20 mL	20 mL	391193	02/28/17 23:25	DB	TAL IRV
Dissolved	Analysis	245.1		1			391244	03/01/17 04:19	DB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-391393/1-A
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 391393

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		5.00	2.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
2,4-Dinitrotoluene	ND		5.00	2.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
N-Nitrosodimethylamine	ND		2.00	1.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
Pentachlorophenol	ND		2.00	1.00	ug/L		03/01/17 14:38	03/05/17 03:39	1
2,4,6-Trichlorophenol	ND		1.00	0.500	ug/L		03/01/17 14:38	03/05/17 03:39	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	63		50 - 120	03/01/17 14:38	03/05/17 03:39	1
2-Fluorophenol	63		30 - 120	03/01/17 14:38	03/05/17 03:39	1
2,4,6-Tribromophenol	74		40 - 120	03/01/17 14:38	03/05/17 03:39	1
Nitrobenzene-d5	65		45 - 120	03/01/17 14:38	03/05/17 03:39	1
Terphenyl-d14	82		37 - 144	03/01/17 14:38	03/05/17 03:39	1
Phenol-d6	57		35 - 120	03/01/17 14:38	03/05/17 03:39	1

Lab Sample ID: LCS 440-391393/2-A
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 391393

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	10.0	5.488		ug/L		55	10 - 150
2,4-Dinitrotoluene	10.0	5.918		ug/L		59	39 - 139
N-Nitrosodimethylamine	10.0	4.820		ug/L		48	26 - 117
Pentachlorophenol	20.0	12.34		ug/L		62	14 - 150
2,4,6-Trichlorophenol	10.0	5.224		ug/L		52	37 - 144

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorobiphenyl	48	LG	50 - 120
2-Fluorophenol	48		30 - 120
2,4,6-Tribromophenol	62		40 - 120
Nitrobenzene-d5	49		45 - 120
Terphenyl-d14	59		37 - 144
Phenol-d6	45		35 - 120

Lab Sample ID: 440-178167-H-1-B MSD
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 391393

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Bis(2-ethylhexyl) phthalate	ND		10.3	8.609		ug/L		84	10 - 150	5	25
2,4-Dinitrotoluene	ND		10.3	8.778		ug/L		85	39 - 139	1	25
N-Nitrosodimethylamine	ND		10.3	6.994		ug/L		68	12 - 123	2	35
Pentachlorophenol	ND		20.6	19.58		ug/L		95	14 - 150	1	25
2,4,6-Trichlorophenol	ND		10.3	8.315		ug/L		81	37 - 144	2	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl	71		50 - 120
2-Fluorophenol	68		30 - 120

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-178167-H-1-B MSD
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 391393

Surrogate	MSD		Limits
	%Recovery	Qualifier	
2,4,6-Tribromophenol	91		40 - 120
Nitrobenzene-d5	75		45 - 120
Terphenyl-d14	91		37 - 144
Phenol-d6	71		35 - 120

Lab Sample ID: 440-178167-K-1-A MS
Matrix: Water
Analysis Batch: 392070

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 391393

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	Limits
				Result	Qualifier				
Bis(2-ethylhexyl) phthalate	ND		10.1	8.165		ug/L		81	10 - 150
2,4-Dinitrotoluene	ND		10.1	8.883		ug/L		88	39 - 139
N-Nitrosodimethylamine	ND		10.1	7.116		ug/L		70	12 - 123
Pentachlorophenol	ND		20.2	19.69		ug/L		97	14 - 150
2,4,6-Trichlorophenol	ND		10.1	8.186		ug/L		81	37 - 144

Surrogate	MS		Limits
	%Recovery	Qualifier	
2-Fluorobiphenyl	68		50 - 120
2-Fluorophenol	69		30 - 120
2,4,6-Tribromophenol	92		40 - 120
Nitrobenzene-d5	76		45 - 120
Terphenyl-d14	89		37 - 144
Phenol-d6	67		35 - 120

Method: 608 Pesticides - Organochlorine Pesticides Low level

Lab Sample ID: MB 440-390698/1-A
Matrix: Water
Analysis Batch: 390902

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390698

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
alpha-BHC	ND		0.0050	0.0025	ug/L		02/27/17 06:31	02/28/17 00:47	1

Lab Sample ID: LCS 440-390698/2-A
Matrix: Water
Analysis Batch: 390902

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390698

Analyte	Spike Added	LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
alpha-BHC	0.200	0.169		ug/L		84	37 - 134

Surrogate	LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	69		10 - 150

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 608 Pesticides - Organochlorine Pesticides Low level (Continued)

Lab Sample ID: LCSD 440-390698/3-A

Matrix: Water
Analysis Batch: 390902

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA
Prep Batch: 390698

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	0.200	0.178		ug/L		89	37 - 134	5	35
Surrogate									
<i>Tetrachloro-m-xylene</i>									
		LCSD %Recovery	LCSD Qualifier						Limits
		73							10 - 150

Lab Sample ID: 440-178167-H-1-A MS

Matrix: Water
Analysis Batch: 391420

Client Sample ID: Matrix Spike

Prep Type: Total/NA
Prep Batch: 390698

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	ND		0.204	0.164		ug/L		80	40 - 120		
Surrogate											
<i>Tetrachloro-m-xylene</i>											
		MS %Recovery	MS Qualifier								Limits
		68									10 - 150

Lab Sample ID: 440-178167-J-1-A MSD

Matrix: Water
Analysis Batch: 391420

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA
Prep Batch: 390698

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
alpha-BHC	ND		0.196	0.149	PI	ug/L		76	40 - 120	3	30
Surrogate											
<i>Tetrachloro-m-xylene</i>											
		MSD %Recovery	MSD Qualifier								Limits
		60									10 - 150

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-391013/5

Matrix: Water
Analysis Batch: 391013

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	ND		0.11	0.055	mg/L			02/28/17 12:50	1
Nitrite as N	ND		0.15	0.070	mg/L			02/28/17 12:50	1

Lab Sample ID: LCS 440-391013/4

Matrix: Water
Analysis Batch: 391013

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.13	1.04		mg/L		92	90 - 110		
Nitrite as N	1.52	1.54		mg/L		101	90 - 110		
Nitrite as NO2	5.00	5.05		mg/L		101	90 - 110		
Nitrate as NO3	5.00	4.59		mg/L		92	90 - 110		

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-178167-B-1 MS
Matrix: Water
Analysis Batch: 391013

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	1.0		1.13	1.99		mg/L		88	80 - 120
Nitrite as N	ND		1.52	1.57		mg/L		103	80 - 120
Nitrite as NO2	ND		5.00	5.16		mg/L		103	80 - 120
Nitrate as NO3	4.4		5.00	8.82		mg/L		88	80 - 120

Lab Sample ID: 440-178167-B-1 MSD
Matrix: Water
Analysis Batch: 391013

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	1.0		1.13	1.95		mg/L		84	80 - 120	2	20
Nitrite as N	ND		1.52	1.53		mg/L		100	80 - 120	3	20
Nitrite as NO2	ND		5.00	5.03		mg/L		101	80 - 120	3	20
Nitrate as NO3	4.4		5.00	8.62		mg/L		84	80 - 120	2	20

Lab Sample ID: MB 440-391014/5
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.25	mg/L			02/28/17 12:50	1
Sulfate	ND		0.50	0.25	mg/L			02/28/17 12:50	1

Lab Sample ID: LCS 440-391014/4
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	4.92		mg/L		98	90 - 110
Sulfate	5.00	4.79		mg/L		96	90 - 110

Lab Sample ID: 440-178167-B-1 MS
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	11		5.00	17.0		mg/L		112	80 - 120

Lab Sample ID: 440-178167-B-1 MSD
Matrix: Water
Analysis Batch: 391014

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	11		5.00	16.9		mg/L		110	80 - 120	1	20

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MB 440-390759/64
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		4.0	0.95	ug/L			02/28/17 10:31	1

Lab Sample ID: LCS 440-390759/65
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	25.0	23.1		ug/L		92	85 - 115

Lab Sample ID: MRL 440-390759/5
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	4.00	3.70	J,DX	ug/L		93	75 - 125

Lab Sample ID: 440-178167-C-1 MS
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perchlorate	ND		25.0	27.9		ug/L		112	80 - 120

Lab Sample ID: 440-178167-C-1 MSD
Matrix: Water
Analysis Batch: 390759

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perchlorate	ND		25.0	27.9		ug/L		112	80 - 120	0	20

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-153547/1-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153547

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8-PeCDD	ND		0.000050	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8-PeCDF	0.00000105	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
2,3,4,7,8-PeCDF	0.000000793	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,7,8-HxCDD	ND		0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,6,7,8-HxCDD	0.00000104	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8,9-HxCDD	0.000000557	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-153547/1-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153547

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3,4,7,8-HxCDF	0.00000103	J,DX	0.000050	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,6,7,8-HxCDF	0.000000880	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,7,8,9-HxCDF	ND		0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
2,3,4,6,7,8-HxCDF	0.000000935	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,6,7,8-HpCDD	ND		0.000050	0.0000010	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,6,7,8-HpCDF	0.00000114	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
1,2,3,4,7,8,9-HpCDF	ND		0.000050	0.0000004	ug/L		03/07/17 07:19	03/12/17 06:51	1
OCDD	0.00000520	J,DX q	0.00010	0.0000006	ug/L		03/07/17 07:19	03/12/17 06:51	1
OCDF	0.00000250	J,DX	0.00010	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total TCDD	ND		0.000010	0.0000018	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total TCDF	0.000000802	J,DX q	0.000010	0.0000001	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total PeCDD	ND		0.000050	0.0000014	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total PeCDF	0.00000198	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HxCDD	0.00000160	J,DX q	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HxCDF	0.00000285	J,DX	0.000050	0.0000002	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HpCDD	0.00000120	J,DX q	0.000050	0.0000010	ug/L		03/07/17 07:19	03/12/17 06:51	1
Total HpCDF	0.00000114	J,DX q	0.000050	0.0000003	ug/L		03/07/17 07:19	03/12/17 06:51	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	59		25 - 164	03/07/17 07:19	03/12/17 06:51	1
13C-2,3,7,8-TCDF	58		24 - 169	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,7,8-PeCDD	59		25 - 181	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,7,8-PeCDF	54		24 - 185	03/07/17 07:19	03/12/17 06:51	1
13C-2,3,4,7,8-PeCDF	56		21 - 178	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,7,8-HxCDD	57		32 - 141	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,6,7,8-HxCDD	62		28 - 130	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,7,8-HxCDF	50		26 - 152	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,6,7,8-HxCDF	55		26 - 123	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,7,8,9-HxCDF	52		29 - 147	03/07/17 07:19	03/12/17 06:51	1
13C-2,3,4,6,7,8-HxCDF	58		28 - 136	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,6,7,8-HpCDD	54		23 - 140	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,6,7,8-HpCDF	56		28 - 143	03/07/17 07:19	03/12/17 06:51	1
13C-1,2,3,4,7,8,9-HpCDF	49		26 - 138	03/07/17 07:19	03/12/17 06:51	1
13C-OCDD	54		17 - 157	03/07/17 07:19	03/12/17 06:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	88		35 - 197	03/07/17 07:19	03/12/17 06:51	1

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-153547/2-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153547

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000192		ug/L		96	67 - 158
2,3,7,8-TCDF	0.000200	0.000174	MB	ug/L		87	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000966		ug/L		97	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000946	MB	ug/L		95	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000972	MB	ug/L		97	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000947		ug/L		95	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000967	MB	ug/L		97	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000946	MB	ug/L		95	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000974	MB	ug/L		97	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000973	MB	ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000949		ug/L		95	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000945	MB	ug/L		94	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000947		ug/L		95	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000945	MB	ug/L		95	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000974		ug/L		97	78 - 138
OCDD	0.00200	0.00194	MB	ug/L		97	78 - 144
OCDF	0.00200	0.00185	MB	ug/L		92	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	74		20 - 175
13C-2,3,7,8-TCDF	72		22 - 152
13C-1,2,3,7,8-PeCDD	77		21 - 227
13C-1,2,3,7,8-PeCDF	70		21 - 192
13C-2,3,4,7,8-PeCDF	72		13 - 328
13C-1,2,3,4,7,8-HxCDD	68		21 - 193
13C-1,2,3,6,7,8-HxCDD	81		25 - 163
13C-1,2,3,4,7,8-HxCDF	64		19 - 202
13C-1,2,3,6,7,8-HxCDF	67		21 - 159
13C-1,2,3,7,8,9-HxCDF	66		17 - 205
13C-2,3,4,6,7,8-HxCDF	73		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	70		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	70		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	64		20 - 186
13C-OCDD	68		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	87		31 - 191

Lab Sample ID: LCSD 320-153547/3-A
Matrix: Water
Analysis Batch: 154715

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 153547

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000184		ug/L		92	67 - 158	4	50
2,3,7,8-TCDF	0.000200	0.000176	MB	ug/L		88	75 - 158	1	50
1,2,3,7,8-PeCDD	0.00100	0.000993		ug/L		99	70 - 142	3	50
1,2,3,7,8-PeCDF	0.00100	0.000943	MB	ug/L		94	80 - 134	0	50
2,3,4,7,8-PeCDF	0.00100	0.000970	MB	ug/L		97	68 - 160	0	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-153547/3-A

Matrix: Water

Analysis Batch: 154715

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 153547

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000978		ug/L		98	70 - 164	3	50
1,2,3,6,7,8-HxCDD	0.00100	0.000913	MB	ug/L		91	76 - 134	6	50
1,2,3,7,8,9-HxCDD	0.00100	0.000933	MB	ug/L		93	64 - 162	1	50
1,2,3,4,7,8-HxCDF	0.00100	0.000946	MB	ug/L		95	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.000939	MB	ug/L		94	84 - 130	4	50
1,2,3,7,8,9-HxCDF	0.00100	0.000946		ug/L		95	78 - 130	0	50
2,3,4,6,7,8-HxCDF	0.00100	0.000952	MB	ug/L		95	70 - 156	1	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000932		ug/L		93	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000911	MB	ug/L		91	82 - 122	4	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000926		ug/L		93	78 - 138	5	50
OCDD	0.00200	0.00187	MB	ug/L		93	78 - 144	4	50
OCDF	0.00200	0.00182	MB	ug/L		91	63 - 170	2	50

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	64		20 - 175
13C-2,3,7,8-TCDF	60		22 - 152
13C-1,2,3,7,8-PeCDD	61		21 - 227
13C-1,2,3,7,8-PeCDF	59		21 - 192
13C-2,3,4,7,8-PeCDF	59		13 - 328
13C-1,2,3,4,7,8-HxCDD	57		21 - 193
13C-1,2,3,6,7,8-HxCDD	69		25 - 163
13C-1,2,3,4,7,8-HxCDF	55		19 - 202
13C-1,2,3,6,7,8-HxCDF	58		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	60		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	59		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	60		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	56		20 - 186
13C-OCDD	60		13 - 199

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	86		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-153547/1-A

Matrix: Water

Analysis Batch: 155294

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 153547

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000014	ug/L		03/07/17 07:19	03/15/17 22:51	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDF - RA	60		24 - 169	03/07/17 07:19	03/15/17 22:51	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD - RA	85		35 - 197	03/07/17 07:19	03/15/17 22:51	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-392459/1-A
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/07/17 12:01	03/13/17 15:34	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 12:01	03/13/17 15:34	1
Copper	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Lead	ND		1.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 12:01	03/13/17 15:34	1

Lab Sample ID: LCS 440-392459/2-A
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Zinc	80.0	88.0		ug/L		110	85 - 115
Cadmium	80.0	88.5		ug/L		111	85 - 115
Copper	80.0	88.3		ug/L		110	85 - 115
Lead	80.0	88.9		ug/L		111	85 - 115
Selenium	80.0	90.7		ug/L		113	85 - 115

Lab Sample ID: 440-178167-F-1-C MS
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Zinc	ND		80.0	75.6		ug/L		95	70 - 130
Cadmium	ND		80.0	75.0		ug/L		94	70 - 130
Copper	2.2		80.0	76.9		ug/L		93	70 - 130
Lead	ND		80.0	76.4		ug/L		96	70 - 130
Selenium	ND		80.0	74.6		ug/L		93	70 - 130

Lab Sample ID: 440-178167-F-1-D MSD
Matrix: Water
Analysis Batch: 393721

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 392459

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Zinc	ND		80.0	76.2		ug/L		95	70 - 130	1	20
Cadmium	ND		80.0	74.6		ug/L		93	70 - 130	0	20
Copper	2.2		80.0	76.8		ug/L		93	70 - 130	0	20
Lead	ND		80.0	77.0		ug/L		96	70 - 130	1	20
Selenium	ND		80.0	75.3		ug/L		94	70 - 130	1	20

Lab Sample ID: MB 440-391091/1-H
Matrix: Water
Analysis Batch: 393112

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 392532

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	ND		20	10	ug/L		03/07/17 15:21	03/09/17 15:16	1
Cadmium	ND		1.0	0.25	ug/L		03/07/17 15:21	03/09/17 15:16	1
Copper	ND		2.0	0.50	ug/L		03/07/17 15:21	03/09/17 15:16	1
Lead	ND		1.0	0.50	ug/L		03/07/17 15:21	03/09/17 15:16	1
Selenium	ND		2.0	0.50	ug/L		03/07/17 15:21	03/09/17 15:16	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Lab Sample ID: LCS 440-391091/2-H
Matrix: Water
Analysis Batch: 393112

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 392532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	80.0	75.6		ug/L		95	85 - 115
Cadmium	80.0	72.2		ug/L		90	85 - 115
Copper	80.0	73.1		ug/L		91	85 - 115
Lead	80.0	73.5		ug/L		92	85 - 115
Selenium	80.0	71.0		ug/L		89	85 - 115

Lab Sample ID: 440-178168-3 MS
Matrix: Water
Analysis Batch: 393112

Client Sample ID: Outfall018_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 392532

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	ND	QP	80.0	74.0		ug/L		93	70 - 130
Cadmium	ND	QP	80.0	72.6		ug/L		91	70 - 130
Copper	2.0	QP	80.0	74.5		ug/L		91	70 - 130
Lead	ND	QP	80.0	74.4		ug/L		93	70 - 130
Selenium	ND	QP	80.0	70.9		ug/L		89	70 - 130

Lab Sample ID: 440-178168-3 MSD
Matrix: Water
Analysis Batch: 393112

Client Sample ID: Outfall018_20170227_Comp_F
Prep Type: Dissolved
Prep Batch: 392532

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Zinc	ND	QP	80.0	73.4		ug/L		92	70 - 130	1	20
Cadmium	ND	QP	80.0	73.8		ug/L		92	70 - 130	2	20
Copper	2.0	QP	80.0	74.8		ug/L		91	70 - 130	0	20
Lead	ND	QP	80.0	73.2		ug/L		91	70 - 130	2	20
Selenium	ND	QP	80.0	70.3		ug/L		88	70 - 130	1	20

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 440-392479/1-A
Matrix: Water
Analysis Batch: 392812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392479

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		03/07/17 13:16	03/07/17 23:10	1

Lab Sample ID: LCS 440-392479/2-A
Matrix: Water
Analysis Batch: 392812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	8.27		ug/L		103	85 - 115

Lab Sample ID: 440-178168-1 MS
Matrix: Water
Analysis Batch: 392812

Client Sample ID: Outfall018_20170227_Comp
Prep Type: Total/NA
Prep Batch: 392479

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.18		ug/L		102	70 - 130

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 245.1 - Mercury (CVAA) (Continued)

Lab Sample ID: 440-178168-1 MSD
Matrix: Water
Analysis Batch: 392812

Client Sample ID: Outfall018_20170227_Comp
Prep Type: Total/NA
Prep Batch: 392479

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	8.12		ug/L		102	70 - 130	1	20

Lab Sample ID: MB 440-391091/1-B
Matrix: Water
Analysis Batch: 391244

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 391193

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.10	ug/L		02/28/17 23:25	03/01/17 04:05	1

Lab Sample ID: LCS 440-391091/2-B
Matrix: Water
Analysis Batch: 391244

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 391193

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	8.00	7.72		ug/L		97	85 - 115

Lab Sample ID: 440-178169-A-1-C MS
Matrix: Water
Analysis Batch: 391244

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 391193

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		8.00	8.05		ug/L		101	70 - 130

Lab Sample ID: 440-178169-A-1-D MSD
Matrix: Water
Analysis Batch: 391244

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 391193

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		8.00	7.78		ug/L		97	70 - 130	4	20

Method: 180.1 - Turbidity, Nephelometric

Lab Sample ID: MB 440-391087/5
Matrix: Water
Analysis Batch: 391087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Turbidity	ND		0.10	0.040	NTU			02/28/17 17:03	1

Lab Sample ID: 440-178180-J-1 DU
Matrix: Water
Analysis Batch: 391087

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Turbidity	1.1		1.12		NTU		2	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 440-391570/1
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	5.0	mg/L			03/02/17 09:00	1

Lab Sample ID: LCS 440-391570/2
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	964		mg/L		96	90 - 110

Lab Sample ID: 440-177985-C-1 DU
Matrix: Water
Analysis Batch: 391570

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	210		202		mg/L		4	5

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-391475/1
Matrix: Water
Analysis Batch: 391475

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/01/17 19:03	1

Lab Sample ID: LCS 440-391475/2
Matrix: Water
Analysis Batch: 391475

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	981		mg/L		98	85 - 115

Lab Sample ID: 440-177987-B-1 DU
Matrix: Water
Analysis Batch: 391475

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	27		26.5		mg/L		2	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-392271/1-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 392271

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/06/17 14:31	03/07/17 17:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: LCS 440-392271/2-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	92.0		ug/L		92	90 - 110

Lab Sample ID: LCSD 440-392271/3-A
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	100	95.7		ug/L		96	90 - 110	4	10

Lab Sample ID: 440-178167-G-1-C MS
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	ND		100	103		ug/L		103	70 - 115

Lab Sample ID: 440-178167-G-1-F MSD
Matrix: Water
Analysis Batch: 392591

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 392271

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	101		ug/L		101	70 - 115	3	15

Method: SM 4500 NH3 G - Ammonia

Lab Sample ID: MB 440-391180/10
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	ND		0.200	0.100	mg/L			02/28/17 17:27	1

Lab Sample ID: LCS 440-391180/11
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	5.00	5.100		mg/L		102	90 - 110

Lab Sample ID: MRL 440-391180/9
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	0.200	0.2590		mg/L		130	10 - 200

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: SM 4500 NH3 G - Ammonia (Continued)

Lab Sample ID: 440-178167-F-1 MS
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	ND		5.00	5.410		mg/L		108	90 - 110

Lab Sample ID: 440-178167-F-1 MSD
Matrix: Water
Analysis Batch: 391180

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia (as N)	ND		5.00	5.320		mg/L		106	90 - 110	2	15

Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-390892/3
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Blue Active Substances	ND		0.10	0.050	mg/L			02/27/17 20:03	1

Lab Sample ID: LCS 440-390892/4
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.250	0.252		mg/L		101	90 - 110

Lab Sample ID: MRL 440-390892/5
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	0.100	0.124		mg/L		124	50 - 150

Lab Sample ID: 440-178167-B-1 MS
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Blue Active Substances	ND		0.250	0.237		mg/L		95	50 - 125

Lab Sample ID: 440-178167-B-1 MSD
Matrix: Water
Analysis Batch: 390892

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Blue Active Substances	ND		0.250	0.274		mg/L		110	50 - 125	14	20

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-390824/1
Matrix: Water
Analysis Batch: 390824

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	ND		2.0	0.50	mg/L			02/27/17 14:30	1

Lab Sample ID: LCS 440-390824/4
Matrix: Water
Analysis Batch: 390824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	199	192		mg/L		96	85 - 115

Lab Sample ID: LCSD 440-390824/5
Matrix: Water
Analysis Batch: 390824

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Biochemical Oxygen Demand	199	193		mg/L		97	85 - 115	1	20

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

GC/MS Semi VOA

Prep Batch: 391393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	625	
MB 440-391393/1-A	Method Blank	Total/NA	Water	625	
LCS 440-391393/2-A	Lab Control Sample	Total/NA	Water	625	
440-178167-H-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	
440-178167-K-1-A MS	Matrix Spike	Total/NA	Water	625	

Analysis Batch: 392070

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	625	391393
MB 440-391393/1-A	Method Blank	Total/NA	Water	625	391393
LCS 440-391393/2-A	Lab Control Sample	Total/NA	Water	625	391393
440-178167-H-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	391393
440-178167-K-1-A MS	Matrix Spike	Total/NA	Water	625	391393

GC Semi VOA

Prep Batch: 390698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	608	
MB 440-390698/1-A	Method Blank	Total/NA	Water	608	
LCS 440-390698/2-A	Lab Control Sample	Total/NA	Water	608	
LCS 440-390698/3-A	Lab Control Sample Dup	Total/NA	Water	608	
440-178167-H-1-A MS	Matrix Spike	Total/NA	Water	608	
440-178167-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608	

Analysis Batch: 390902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-390698/1-A	Method Blank	Total/NA	Water	608 Pesticides	390698
LCS 440-390698/2-A	Lab Control Sample	Total/NA	Water	608 Pesticides	390698
LCS 440-390698/3-A	Lab Control Sample Dup	Total/NA	Water	608 Pesticides	390698

Analysis Batch: 391420

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	608 Pesticides	390698
440-178167-H-1-A MS	Matrix Spike	Total/NA	Water	608 Pesticides	390698
440-178167-J-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	608 Pesticides	390698

HPLC/IC

Analysis Batch: 390759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	314.0	
MB 440-390759/64	Method Blank	Total/NA	Water	314.0	
LCS 440-390759/65	Lab Control Sample	Total/NA	Water	314.0	
MRL 440-390759/5	Lab Control Sample	Total/NA	Water	314.0	
440-178167-C-1 MS	Matrix Spike	Total/NA	Water	314.0	
440-178167-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

HPLC/IC (Continued)

Analysis Batch: 391013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	300.0	
MB 440-391013/5	Method Blank	Total/NA	Water	300.0	
LCS 440-391013/4	Lab Control Sample	Total/NA	Water	300.0	
440-178167-B-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-178167-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 391014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	300.0	
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	300.0	
MB 440-391014/5	Method Blank	Total/NA	Water	300.0	
LCS 440-391014/4	Lab Control Sample	Total/NA	Water	300.0	
440-178167-B-1 MS	Matrix Spike	Total/NA	Water	300.0	
440-178167-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Analysis Batch: 393228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	NO3NO2 Calc	

Specialty Organics

Prep Batch: 153547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	1613B	
440-178168-1 - RA	Outfall018_20170227_Comp	Total/NA	Water	1613B	
MB 320-153547/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-153547/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-153547/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-153547/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 154715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-153547/1-A	Method Blank	Total/NA	Water	1613B	153547
LCS 320-153547/2-A	Lab Control Sample	Total/NA	Water	1613B	153547
LCSD 320-153547/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	153547

Analysis Batch: 154717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	1613B	153547

Analysis Batch: 155037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1 - RA	Outfall018_20170227_Comp	Total/NA	Water	1613B	153547

Analysis Batch: 155294

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-153547/1-A - RA	Method Blank	Total/NA	Water	1613B	153547

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Metals

Filtration Batch: 391091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-3	Outfall018_20170227_Comp_F	Dissolved	Water	FILTRATION	
MB 440-391091/1-B	Method Blank	Dissolved	Water	FILTRATION	
MB 440-391091/1-H	Method Blank	Dissolved	Water	FILTRATION	
LCS 440-391091/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
LCS 440-391091/2-H	Lab Control Sample	Dissolved	Water	FILTRATION	
440-178168-3 MS	Outfall018_20170227_Comp_F	Dissolved	Water	FILTRATION	
440-178168-3 MSD	Outfall018_20170227_Comp_F	Dissolved	Water	FILTRATION	
440-178169-A-1-C MS	Matrix Spike	Dissolved	Water	FILTRATION	
440-178169-A-1-D MSD	Matrix Spike Duplicate	Dissolved	Water	FILTRATION	

Prep Batch: 391193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-3	Outfall018_20170227_Comp_F	Dissolved	Water	245.1	391091
MB 440-391091/1-B	Method Blank	Dissolved	Water	245.1	391091
LCS 440-391091/2-B	Lab Control Sample	Dissolved	Water	245.1	391091
440-178169-A-1-C MS	Matrix Spike	Dissolved	Water	245.1	391091
440-178169-A-1-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	391091

Analysis Batch: 391244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-3	Outfall018_20170227_Comp_F	Dissolved	Water	245.1	391193
MB 440-391091/1-B	Method Blank	Dissolved	Water	245.1	391193
LCS 440-391091/2-B	Lab Control Sample	Dissolved	Water	245.1	391193
440-178169-A-1-C MS	Matrix Spike	Dissolved	Water	245.1	391193
440-178169-A-1-D MSD	Matrix Spike Duplicate	Dissolved	Water	245.1	391193

Prep Batch: 392459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total Recoverable	Water	200.2	
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-178167-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-178167-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Prep Batch: 392479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	245.1	
MB 440-392479/1-A	Method Blank	Total/NA	Water	245.1	
LCS 440-392479/2-A	Lab Control Sample	Total/NA	Water	245.1	
440-178168-1 MS	Outfall018_20170227_Comp	Total/NA	Water	245.1	
440-178168-1 MSD	Outfall018_20170227_Comp	Total/NA	Water	245.1	

Prep Batch: 392532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-3	Outfall018_20170227_Comp_F	Dissolved	Water	200.2	391091
MB 440-391091/1-H	Method Blank	Dissolved	Water	200.2	391091
LCS 440-391091/2-H	Lab Control Sample	Dissolved	Water	200.2	391091
440-178168-3 MS	Outfall018_20170227_Comp_F	Dissolved	Water	200.2	391091
440-178168-3 MSD	Outfall018_20170227_Comp_F	Dissolved	Water	200.2	391091

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Metals (Continued)

Analysis Batch: 392812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	245.1	392479
MB 440-392479/1-A	Method Blank	Total/NA	Water	245.1	392479
LCS 440-392479/2-A	Lab Control Sample	Total/NA	Water	245.1	392479
440-178168-1 MS	Outfall018_20170227_Comp	Total/NA	Water	245.1	392479
440-178168-1 MSD	Outfall018_20170227_Comp	Total/NA	Water	245.1	392479

Analysis Batch: 393112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-3	Outfall018_20170227_Comp_F	Dissolved	Water	200.8	392532
MB 440-391091/1-H	Method Blank	Dissolved	Water	200.8	392532
LCS 440-391091/2-H	Lab Control Sample	Dissolved	Water	200.8	392532
440-178168-3 MS	Outfall018_20170227_Comp_F	Dissolved	Water	200.8	392532
440-178168-3 MSD	Outfall018_20170227_Comp_F	Dissolved	Water	200.8	392532

Analysis Batch: 393721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total Recoverable	Water	200.8	392459
MB 440-392459/1-A	Method Blank	Total Recoverable	Water	200.8	392459
LCS 440-392459/2-A	Lab Control Sample	Total Recoverable	Water	200.8	392459
440-178167-F-1-C MS	Matrix Spike	Total Recoverable	Water	200.8	392459
440-178167-F-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	392459

General Chemistry

Analysis Batch: 390824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	SM5210B	
USB 440-390824/1	Method Blank	Total/NA	Water	SM5210B	
LCS 440-390824/4	Lab Control Sample	Total/NA	Water	SM5210B	
LCSD 440-390824/5	Lab Control Sample Dup	Total/NA	Water	SM5210B	

Analysis Batch: 390892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	SM 5540C	
MB 440-390892/3	Method Blank	Total/NA	Water	SM 5540C	
LCS 440-390892/4	Lab Control Sample	Total/NA	Water	SM 5540C	
MRL 440-390892/5	Lab Control Sample	Total/NA	Water	SM 5540C	
440-178167-B-1 MS	Matrix Spike	Total/NA	Water	SM 5540C	
440-178167-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 5540C	

Analysis Batch: 391087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	180.1	
MB 440-391087/5	Method Blank	Total/NA	Water	180.1	
440-178180-J-1 DU	Duplicate	Total/NA	Water	180.1	

Analysis Batch: 391180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	SM 4500 NH3 G	
MB 440-391180/10	Method Blank	Total/NA	Water	SM 4500 NH3 G	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

General Chemistry (Continued)

Analysis Batch: 391180 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 440-391180/11	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
MRL 440-391180/9	Lab Control Sample	Total/NA	Water	SM 4500 NH3 G	
440-178167-F-1 MS	Matrix Spike	Total/NA	Water	SM 4500 NH3 G	
440-178167-F-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 NH3 G	

Analysis Batch: 391475

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	SM 2540D	
MB 440-391475/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-391475/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-177987-B-1 DU	Duplicate	Total/NA	Water	SM 2540D	

Analysis Batch: 391570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	SM 2540C	
MB 440-391570/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 440-391570/2	Lab Control Sample	Total/NA	Water	SM 2540C	
440-177985-C-1 DU	Duplicate	Total/NA	Water	SM 2540C	

Prep Batch: 392271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	Distill/CN	
MB 440-392271/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-392271/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
LCSD 440-392271/3-A	Lab Control Sample Dup	Total/NA	Water	Distill/CN	
440-178167-G-1-C MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-178167-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 392591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	SM 4500 CN E	392271
MB 440-392271/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	392271
LCS 440-392271/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	392271
LCSD 440-392271/3-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN E	392271
440-178167-G-1-C MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	392271
440-178167-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	392271

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
LG	LG=Surrogate recovery below the acceptance limits

GC Semi VOA

Qualifier	Qualifier Description
PI	Primary and confirm results varied by > than 40% RPD

HPLC/IC

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Metals

Qualifier	Qualifier Description
QP	Holding time Immediate. Analyzed as close to receipt as possible

General Chemistry

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
608 Pesticides	608	Water	alpha-BHC
625	625	Water	2,4,6-Trichlorophenol
625	625	Water	2,4-Dinitrotoluene
625	625	Water	Bis(2-ethylhexyl) phthalate
625	625	Water	N-Nitrosodimethylamine
625	625	Water	Pentachlorophenol
NO3NO2 Calc		Water	Nitrate Nitrite as N

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvasi Patel 17461 Denton Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 Sampler: <i>BayamBenson, Craig Wagner</i>		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 018 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Comments		
Sample Description Outfall 018	Sample I.D. Outfall018_20170227_Comp_F Outfall018_20170227_Comp	Sampling Date/Time 2/27/2017/10:00 2/27/2017/10:00	Sample Matrix WM WM WM WM WM	Container Type 1L Poly borosilicate vials 500 mL Poly 2.5 Gall Cube 1L Glass vial 1 Gall Cube	# of Cont. 1 1 1 1 8	Preservative None None NaOH None None None	Bottle # 200 320 220 225 230 235	MS/MSD No No No No No No	Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1 & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Filler and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year

JSC
 0.4/0.4
 0.8/1.0
 1.1/1.0
 2.9/3.7
 1.0/1.5
 0.2/0.2
 0.3/0.8
 1.1/1.6
 1.0/2.8
 1.6/2.1
 1.0/2.5



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvasi	Lab PM: Patel, Urvasi	Carrier Tracking No(s): 440-108188-1	COC No: 440-108188-1
Client Contact: urvashi.patel@testamericainc.com		E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1	Job #: 440-178168-1
Shipping/Receiving		Accreditations Required (See note): State Program - California		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AgNO2 P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Company: TestAmerica Laboratories, Inc.		Due Date Requested: 3/9/2017		Analysis Requested:	
Address: 880 Riverside Parkway, West Sacramento, CA, 95605		TAT Requested (days):		Total Number of Containers: 2	
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		PO #:		Field Filtered Sample (Yes or No):	
Email:		WO #:		Perform MS/MSD (Yes or No):	
Project Name: Routine Outfall 018 Comp		Project #: 44009879		1512B/1513B_Box_Sep_P Standard List w/ Totals	
Site:		SSOW#:		X	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
Outfall018_20170227_Comp (440-178168-1)		2/27/17		08:10 Pacific	
Sample Type (C=comp, G=grab)		Sample Preservation Code		Matrix (In-water, In-soil, Over-sat)	
				Water	
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysts/test-matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2					
Empty Kit Relinquished by:					
Relinquished by: Sub Bandi Date: 2/28/17 17:00 Company: TAT Company:					
Relinquished by: Date/Time: Company:					
Relinquished by: Date/Time: Company:					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: 164					
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Special Instructions/OC Requirements:					
Method of Shipment:					
Received by: [Signature] Date/Time: 3-1-17 9:30 Company: [Signature]					
Received by: Date/Time: Company:					
Received by: Date/Time: Company:					
Cooler Temperature(s) °C and Other Remarks:					



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab FM:	Camera Tracking Note(s):	COC No:
Client Contact: Shipping/Receiving		Phone:	Patel, Urvashi	State of Origin:	440-108188-1
Company: TestAmerica Laboratories, Inc.		E-Mail: urvashi.patel@testamericainc.com	Accreditations Required (See note): State Program - California	Page:	Page 1 of 1
Address: 880 Riverside Parkway, City: West Sacramento State, Zip: CA, 95605 Phone: 916-373-5600(Tel) 916-372-1059(Fax) Email:		Due Date Requested: 3/9/2017	Field Filtered Sample (Yes or No)	Job #:	440-178168-3
Project Name: Routine Outfall 018 Comp Site:		TAT Requested (days):	Perform MS/MSD (Yes or No)	Preservation Codes:	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:
Sample Identification - Client ID (Lab ID)		FO #:	Field MS/MSD (Yes or No)	Analysis Requested	
Outfall018_20170227_Comp_Extra (440-178168-2)		WO #:	1618/1618_Box_Sep_P Standard List w/ Totals	Total Number of Containers	
Sample Date		Project #: 44009879	Field Filtered Sample (Yes or No)	Special Instructions/Note:	
Sample Time		SSOW#:	X	See OAS; Boeing_wlu to zero, ug/L; Use Boeing glassware.	
Sample Date		2/27/17			
Sample Time		08:10 Pacific			
Sample Type (C=Comp, G=grab)		Matrix (Hexane, Spiked, On-site, A-J)			
Preservation Code:		Water			
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
<p>Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) Empty Kit Relinquished by: Relinquished by: <i>Sub Baully</i> Relinquished by: Relinquished by: Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: <i>1.4</i></p>					
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:</p>					
<p>Primary Deliverable Rank: 2 Date: _____ Time: _____ Method of Shipment: Received by: <i>Chy By</i> Date/Time: <i>3-1-17 9:30</i> Company: <i>TPWS</i> Received by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____ Cooler Temperature(s) °C and Other Remarks:</p>					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178168-1

Login Number: 178168

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178168-1

Login Number: 178168

List Number: 3

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 03/03/17 08:36 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-178168-1	Outfall018_20170227_Comp		79		78		80		76
440-178168-1 - RA	Outfall018_20170227_Comp				66				
MB 320-153547/1-A	Method Blank		59		58		59		54
MB 320-153547/1-A - RA	Method Blank				60				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-178168-1	Outfall018_20170227_Comp		75		79		94		73
440-178168-1 - RA	Outfall018_20170227_Comp								
MB 320-153547/1-A	Method Blank		56		57		62		50
MB 320-153547/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-178168-1	Outfall018_20170227_Comp		81		74		82	83	
440-178168-1 - RA	Outfall018_20170227_Comp								
MB 320-153547/1-A	Method Blank		55		52		58	54	
MB 320-153547/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-178168-1	Outfall018_20170227_Comp		84		76		86
440-178168-1 - RA	Outfall018_20170227_Comp						
MB 320-153547/1-A	Method Blank		56		49		54
MB 320-153547/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-153547/2-A	Lab Control Sample	74	72	77	70	72	68	81	64
LCSD 320-153547/3-A	Lab Control Sample Dup	64	60	61	59	59	57	69	55

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-153547/2-A	Lab Control Sample	67	66	73	70	70	64	68
LCSD 320-153547/3-A	Lab Control Sample Dup	58	56	60	59	60	56	60

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD

TCDF = 13C-2,3,7,8-TCDF

PeCDD = 13C-1,2,3,7,8-PeCDD

PeCDF1 = 13C-1,2,3,7,8-PeCDF

PeCDF2 = 13C-2,3,4,7,8-PeCDF

HxCDD1 = 13C-1,2,3,4,7,8-HxCDD

HxCDD2 = 13C-1,2,3,6,7,8-HxCDD

HxCDF1 = 13C-1,2,3,4,7,8-HxCDF

HxCDF2 = 13C-1,2,3,6,7,8-HxCDF

HxCDF4 = 13C-1,2,3,7,8,9-HxCDF

HxCDF3 = 13C-2,3,4,6,7,8-HxCDF

HpCDD = 13C-1,2,3,4,6,7,8-HpCDD

HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

OCDD = 13C-OCDD

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-178168-2

Client Project/Site: Routine Outfall 018 Comp

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

3/28/2017 9:36:09 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
3/28/2017 9:36:09 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-178168-1	Outfall018_20170227_Comp	Water	02/27/17 08:10	02/27/17 17:45

- 1
- 2
- 3
- 4
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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Job ID: 440-178168-2

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-178168-2

Comments

No additional comments.

Receipt

The samples were received on 2/27/2017 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.9° C, 1.3° C and 1.6° C.

RAD

Method(s) 900.0: Gross alpha/beta Batch 298029:

The gross alpha matrix spike (MS) recovery associated with the following samples was outside control limits of 60-140% (56%): Outfall018_20170227_Comp (440-178168-1), (440-178167-R-1-G), (440-178167-R-1-H MS), (440-178167-R-1-J MSB), (440-178167-R-1-K MSB) and (440-178167-R-1-I MSD). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	-1.54	U	0.807	0.826	3.00	2.12	pCi/L	03/16/17 14:36	03/23/17 05:36	1
Gross Beta	2.17		0.697	0.730	4.00	0.937	pCi/L	03/16/17 14:36	03/23/17 05:36	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-9.65	U	13.6	13.7	20.0	16.8	pCi/L	03/03/17 02:43	03/03/17 09:15	1
Potassium-40	60.9	U	119	120		165	pCi/L	03/03/17 02:43	03/03/17 09:15	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0695	U	0.0712	0.0715	1.00	0.112	pCi/L	03/03/17 13:14	03/27/17 07:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					03/03/17 13:14	03/27/17 07:33	1

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.240	U	0.249	0.250	1.00	0.406	pCi/L	03/03/17 14:10	03/17/17 14:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.8		40 - 110					03/03/17 14:10	03/17/17 14:42	1
Y Carrier	83.7		40 - 110					03/03/17 14:10	03/17/17 14:42	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.189	U	0.191	0.192	3.00	0.311	pCi/L	03/03/17 14:30	03/13/17 10:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.3		40 - 110					03/03/17 14:30	03/13/17 10:35	1
Y Carrier	93.8		40 - 110					03/03/17 14:30	03/13/17 10:35	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-45.0	U	184	184	500	337	pCi/L	03/21/17 12:50	03/21/17 20:28	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Total Uranium	0.0595	U	0.1136	0.1136	1.00	0.165	pCi/L	03/09/17 12:44	03/16/17 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.0		30 - 110					03/09/17 12:44	03/16/17 23:27	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Client Sample ID: Outfall018_20170227_Comp

Lab Sample ID: 440-178168-1

Date Collected: 02/27/17 08:10

Matrix: Water

Date Received: 02/27/17 17:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	298029	03/16/17 14:36	MRB	TAL SL
Total/NA	Analysis	900.0		1	1.0 mL	1.0 mL	299254	03/23/17 05:36	MLK	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	295719	03/03/17 02:43	CMT	TAL SL
Total/NA	Analysis	901.1		1			295914	03/03/17 09:15	KLS	TAL SL
Total/NA	Prep	PrecSep-21			1000.46 mL	1.0 g	295953	03/03/17 13:14	BME	TAL SL
Total/NA	Analysis	903.0		1			300093	03/27/17 07:33	RTM	TAL SL
Total/NA	Prep	PrecSep_0			1000.46 mL	1.0 g	295966	03/03/17 14:10	BME	TAL SL
Total/NA	Analysis	904.0		1			298074	03/17/17 14:42	MLK	TAL SL
Total/NA	Prep	PrecSep-7			1000.17 mL	1.0 g	295967	03/03/17 14:30	BME	TAL SL
Total/NA	Analysis	905		1			297321	03/13/17 10:35	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.0 mL	1.0 g	298834	03/21/17 12:50	JDL	TAL SL
Total/NA	Analysis	906.0		1			299020	03/21/17 20:28	ALD	TAL SL
Total/NA	Prep	ExtChrom			500.30 mL	1.0 mL	296908	03/09/17 12:44	PJM	TAL SL
Total/NA	Analysis	A-01-R		1			298120	03/16/17 23:27	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-298029/1-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298029

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Gross Alpha	1.475		0.692	0.712	3.00	0.852	pCi/L	03/16/17 14:36	03/23/17 05:34	1
Gross Beta	0.5347	U	0.548	0.551	4.00	0.857	pCi/L	03/16/17 14:36	03/23/17 05:34	1

Lab Sample ID: LCS 160-298029/2-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Alpha	49.9	41.97		6.23	3.00	1.84	pCi/L	84	73 - 133

Lab Sample ID: LCSB 160-298029/3-A
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Spike Added	LCSB Result	LCSB Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Gross Beta	90.9	90.32		9.56	4.00	0.870	pCi/L	99	75 - 125

Lab Sample ID: 440-178167-R-1-H MS
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.506	U	49.9	28.11	F1	5.02	3.00	1.85	pCi/L	56	60 - 140

Lab Sample ID: 440-178167-R-1-H MS
Matrix: Water
Analysis Batch: 299549

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Gross Alpha	0.506	U	49.9	28.96	F1	4.89	3.00	1.91	pCi/L	58	60 - 140

Lab Sample ID: 440-178167-R-1-I MSD
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Gross Alpha	0.506	U	49.9	30.52		5.00	3.00	1.46	pCi/L	61	60 - 140	0.16	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-178167-R-1-J MSBT
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	1.73		90.9	93.27		9.87	4.00	1.07	pCi/L	101	60 - 140

Lab Sample ID: 440-178167-R-1-K MSBTD
Matrix: Water
Analysis Batch: 299254

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298029

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	1.73		90.9	90.86		9.63	4.00	0.933	pCi/L	98	60 - 140	0.17	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-295719/1-A
Matrix: Water
Analysis Batch: 295909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295719

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	3.148	U	7.04	7.04	20.0	8.78	pCi/L	03/03/17 02:43	03/03/17 09:13	1
Potassium-40	-2.680	U	127	127		168	pCi/L	03/03/17 02:43	03/03/17 09:13	1

Lab Sample ID: LCS 160-295719/2-A
Matrix: Water
Analysis Batch: 295917

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295719

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132200		15300		434	pCi/L	97	90 - 111
Cesium-137	47000	46340		4650	20.0	139	pCi/L	99	90 - 111
Cobalt-60	39600	38420		3800		80.3	pCi/L	97	89 - 110

Lab Sample ID: 440-178167-R-1-B DU
Matrix: Water
Analysis Batch: 295917

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 295719

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	2.42	U	-3.585	U	12.8	20.0	15.8	pCi/L	0.29	1
Potassium-40	-82.2	U	54.06	U	96.1		158	pCi/L	0.54	1

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-295953/1-A
Matrix: Water
Analysis Batch: 300092

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295953

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.02758	U	0.0542	0.0542	1.00	0.0978	pCi/L	03/03/17 13:14	03/27/17 07:29	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier		40 - 110						
	86.7					03/03/17 13:14	03/27/17 07:29	1		

Lab Sample ID: LCS 160-295953/2-A
Matrix: Water
Analysis Batch: 300092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
				Uncert. (2σ+/-)					
Radium-226	11.4	11.01		1.14	1.00	0.102	pCi/L	97	68 - 137
Carrier	LCS LCS		Limits			Prepared	Analyzed	Dil Fac	
Ba Carrier	%Yield	Qualifier		40 - 110					
	87.9					03/03/17 13:14	03/27/17 07:29	1	

Lab Sample ID: 440-178167-M-1-A MS
Matrix: Water
Analysis Batch: 300093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits
						Uncert. (2σ+/-)					
Radium-226	0.167		11.4	12.29		1.27	1.00	0.110	pCi/L	107	75 - 138
Carrier	MS MS		Limits			Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier		40 - 110							
	90.3					03/03/17 13:14	03/27/17 07:29	1			

Lab Sample ID: 440-178167-M-1-B MSD
Matrix: Water
Analysis Batch: 300093

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295953

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
						Uncert. (2σ+/-)							
Radium-226	0.167		11.4	12.36		1.28	1.00	0.116	pCi/L	107	75 - 138	0.03	1
Carrier	MSD MSD		Limits			Prepared	Analyzed	Dil Fac					
Ba Carrier	%Yield	Qualifier		40 - 110									
	90.6					03/03/17 13:14	03/27/17 07:29	1					

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-295966/1-A
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295966

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1442	U	0.239	0.239	1.00	0.404	pCi/L	03/03/17 14:10	03/17/17 14:41	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	86.7		40 - 110	03/03/17 14:10	03/17/17 14:41	1
Y Carrier	87.9		40 - 110	03/03/17 14:10	03/17/17 14:41	1

Lab Sample ID: LCS 160-295966/2-A
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	13.7	15.19		1.63	1.00	0.390	pCi/L	111	56 - 140

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	87.9		40 - 110
Y Carrier	86.4		40 - 110

Lab Sample ID: 440-178167-M-1-C MS
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	-0.205	U	13.7	15.81		1.69	1.00	0.441	pCi/L	115	45 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	90.3		40 - 110
Y Carrier	86.0		40 - 110

Lab Sample ID: 440-178167-M-1-D MSD
Matrix: Water
Analysis Batch: 298074

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295966

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	-0.205	U	13.7	16.18		1.73	1.00	0.410	pCi/L	118	45 - 150	0.11	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	90.6		40 - 110
Y Carrier	83.0		40 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-295967/1-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295967

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.2817	U	0.201	0.203	3.00	0.315	pCi/L	03/03/17 14:30	03/13/17 10:31	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110	03/03/17 14:30	03/13/17 10:31	1
Y Carrier	97.2		40 - 110	03/03/17 14:30	03/13/17 10:31	1

Lab Sample ID: LCS 160-295967/2-A
Matrix: Water
Analysis Batch: 297320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	8.49	8.729		0.891	3.00	0.264	pCi/L	103	75 - 125

Carrier	LCS %Yield	LCS Qualifier	Limits
Sr Carrier	88.0		40 - 110
Y Carrier	100		40 - 110

Lab Sample ID: 440-178167-M-1-E MS
Matrix: Water
Analysis Batch: 297321

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Strontium-90	-0.0502	U	8.49	8.236		0.866	3.00	0.320	pCi/L	97	19 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Sr Carrier	82.1		40 - 110
Y Carrier	100		40 - 110

Lab Sample ID: 440-178167-M-1-F MSD
Matrix: Water
Analysis Batch: 297321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 295967

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	-0.0502	U	8.49	8.112		0.850	3.00	0.312	pCi/L	96	19 - 150	0.07	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Sr Carrier	80.6		40 - 110
Y Carrier	105		40 - 110

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-298834/1-A
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 298834

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-205.9	U	168	169	500	336	pCi/L	03/21/17 12:50	03/21/17 18:35	1

Lab Sample ID: LCS 160-298834/2-A
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	2930	2901		447	500	340	pCi/L	99	74 - 114

Lab Sample ID: 440-178167-L-1-A MS
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Tritium	-90.1	U	2930	3090		461	500	333	pCi/L	105	67 - 130

Lab Sample ID: 440-178167-L-1-B MSD
Matrix: Water
Analysis Batch: 299020

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 298834

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-90.1	U	2940	2365		397	500	333	pCi/L	81	67 - 130	0.85	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-296908/1-A
Matrix: Water
Analysis Batch: 298080

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 296908

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.1217	U	0.165	0.165	1.00	0.206	pCi/L	03/09/17 12:44	03/16/17 23:27	1

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	73.2		30 - 110	03/09/17 12:44	03/16/17 23:27	1

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Uranium-234	12.7	12.23		1.51	1.00	0.233	pCi/L	96	84 - 120
Uranium-238	13.0	13.62		1.63	1.00	0.207	pCi/L	105	83 - 121

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 160-296908/2-A
Matrix: Water
Analysis Batch: 298121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 296908

	LCS	LCS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	89.4		30 - 110

Lab Sample ID: 440-177394-A-1-L MS
Matrix: Water
Analysis Batch: 298093

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.368		12.7	15.90		1.94	1.00	0.176	pCi/L	122	65 - 146	
Uranium-238	0.217		13.0	15.18		1.87	1.00	0.199	pCi/L	115	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	63.1		30 - 110

Lab Sample ID: 440-177394-A-1-M MSD
Matrix: Water
Analysis Batch: 298111

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	0.368		12.7	12.97		1.60	1.00	0.188	pCi/L	99	65 - 146	0.83	1	
Uranium-238	0.217		13.0	12.73		1.58	1.00	0.137	pCi/L	96	68 - 143	0.71	1	

	MSD	MSD	
Tracer	%Yield	Qualifier	Limits
Uranium-232	81.8		30 - 110

Lab Sample ID: 440-178167-M-1-G MS
Matrix: Water
Analysis Batch: 298118

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Uranium-234	0.116	U	12.8	12.27		1.55	1.00	0.155	pCi/L	96	65 - 146	
Uranium-238	0.139		13.0	13.63		1.67	1.00	0.166	pCi/L	103	68 - 143	

	MS	MS	
Tracer	%Yield	Qualifier	Limits
Uranium-232	74.3		30 - 110

Lab Sample ID: 440-178167-M-1-H MSD
Matrix: Water
Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 296908

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		RER	RER Limit
Uranium-234	0.116	U	12.7	12.35		1.50	1.00	0.145	pCi/L	97	65 - 146	0.03	1	
Uranium-238	0.139		13.0	12.31		1.49	1.00	0.123	pCi/L	94	68 - 143	0.42	1	

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Lab Sample ID: 440-178167-M-1-H MSD

Matrix: Water

Analysis Batch: 298119

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 296908

<i>Tracer</i>	<i>MSD</i>	<i>MSD</i>	<i>Limits</i>
	<i>%Yield</i>	<i>Qualifier</i>	
Uranium-232	89.0		30 - 110

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Rad

Prep Batch: 295719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-295719/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-295719/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-178167-R-1-B DU	Duplicate	Total/NA	Water	Fill_Geo-0	

Prep Batch: 295953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	PrecSep-21	
MB 160-295953/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-295953/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-178167-M-1-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-178167-M-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 295966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	PrecSep_0	
MB 160-295966/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-295966/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-178167-M-1-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-178167-M-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 295967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	PrecSep-7	
MB 160-295967/1-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-295967/2-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-178167-M-1-E MS	Matrix Spike	Total/NA	Water	PrecSep-7	
440-178167-M-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-7	

Prep Batch: 296908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	ExtChrom	
MB 160-296908/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-296908/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-177394-A-1-L MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-177394-A-1-M MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	
440-178167-M-1-G MS	Matrix Spike	Total/NA	Water	ExtChrom	
440-178167-M-1-H MSD	Matrix Spike Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 298029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	Evaporation	
MB 160-298029/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-298029/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-298029/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-178167-R-1-H MS	Matrix Spike	Total/NA	Water	Evaporation	
440-178167-R-1-I MSD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	
440-178167-R-1-J MSBT	Matrix Spike	Total/NA	Water	Evaporation	
440-178167-R-1-K MSBTD	Matrix Spike Duplicate	Total/NA	Water	Evaporation	

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Rad (Continued)

Prep Batch: 298834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-178168-1	Outfall018_20170227_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-298834/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-298834/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-178167-L-1-A MS	Matrix Spike	Total/NA	Water	LSC_Dist_Susp	
440-178167-L-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	LSC_Dist_Susp	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Laboratory: TestAmerica Irvine

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	MO00054	06-30-17
California	State Program	9	2886	03-31-18 *
Connecticut	State Program	1	PH-0241	03-31-17 *
Florida	NELAP	4	E87689	06-30-17
Illinois	NELAP	5	200023	11-30-17
Iowa	State Program	7	373	02-01-18
Kansas	NELAP	7	E-10236	10-31-17
Kentucky (DW)	State Program	4	90125	12-31-17
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-17
Louisiana (DW)	NELAP	6	LA170011	12-31-17
Maryland	State Program	3	310	09-30-17
Missouri	State Program	7	780	06-30-17
Nevada	State Program	9	MO000542017-1	07-31-17
New Jersey	NELAP	2	MO002	06-30-17 *
New York	NELAP	2	11616	03-31-17 *
North Dakota	State Program	8	R207	06-30-17
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-17
Pennsylvania	NELAP	3	68-00540	02-28-18
South Carolina	State Program	4	85002001	06-30-17
Texas	NELAP	6	T104704193-16-10	07-31-17
US Fish & Wildlife	Federal		LE058448-0	10-31-17
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-17
Virginia	NELAP	3	460230	06-14-17
Washington	State Program	10	C592	08-30-17
West Virginia DEP	State Program	3	381	08-31-17 *

* Certification renewal pending - certification considered valid.

CHAIN OF CUSTODY FORM

Test America

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108 Test America Contact: Urvasi Patel 17461 Denton Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055 Sampler: <i>Bayam Benishon</i> <i>Erny Wagner</i>		Project: Boeing-SSFL NPDES Permit 2017 Routine Outfall [001, 002, 011, 018] Outfall 018 Comp		Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Comments		
Sample Description Outfall 018	Sample I.D. Outfall018_20170227_Comp_F Outfall018_20170227_Comp	Sampling Date/Time 2/27/2017/10:00 2/27/2017/10:00	Sample Matrix WM WM WM WM WM	Container Type 1L Poly borosilicate vials 500 mL Poly 2.5 Gall Cube 1L Glass vial 1 Gall Cube	# of Cont. 1 1 1 1 1	Preservative None None NaOH None None None	Bottle # 200 320 220 225 230 235	MS/MSD No No No No No No	Total Dissolved Metals: (E200.7): Zn (E200.8): Cu, Pb, Cd, Se Cyanide (SM4500-CN-E / E335.2) Gross Alpha (E900.0), Gross Beta (E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) Chronic Toxicity - Selenium (EPA-821-R-02-013) Total Dissolved Metals: Mercury (E245.1)	Filler and preserve w/in 24hrs of receipt at lab Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures. Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD. Only test if first or second rain events of the year
Relinquished By: <i>[Signature]</i> Date/Time: 2/27/17 12:50	Company: JHA Date/Time: 2/27/17 12:50	Relinquished By: <i>[Signature]</i> Date/Time: 2/27/17 17:05	Company: Date/Time: 2/27/17 17:05	Relinquished By: <i>[Signature]</i> Date/Time: 2/27/17 17:05	Company: Date/Time: 2/27/17 17:05	Turn-around time: (Check) 24 Hour: _____ 72 Hour: _____ 10 Day: <input checked="" type="checkbox"/> 48 Hour: _____ 5 Day: _____ Normal: _____	Sample Integrity: (Check) Intact: _____ Store samples for 6 months: _____ Data Requirements: (Check) No Level IV: _____ All Level IV: <input checked="" type="checkbox"/>			

JHC
 0.4/0.4
 0.8/1.0
 1.1/1.0
 2.9/3.7
 1.0/1.5
 0.2/0.2
 0.3/0.8
 1.1/1.6
 1.1/1.8
 1.6/2.1
 1.0/8.5



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178168-2

Login Number: 178168

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-178168-2

Login Number: 178168

List Number: 2

Creator: Taylor, Kristene N

List Source: TestAmerica St. Louis

List Creation: 03/02/17 12:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	17.0,17.0,17.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)		
440-178167-M-1-A MS	Matrix Spike	90.3		
440-178167-M-1-B MSD	Matrix Spike Duplicate	90.6		
440-178168-1	Outfall018_20170227_Comp	83.8		
LCS 160-295953/2-A	Lab Control Sample	87.9		
MB 160-295953/1-A	Method Blank	86.7		

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)		
440-178167-M-1-C MS	Matrix Spike	90.3	86.0		
440-178167-M-1-D MSD	Matrix Spike Duplicate	90.6	83.0		
440-178168-1	Outfall018_20170227_Comp	83.8	83.7		
LCS 160-295966/2-A	Lab Control Sample	87.9	86.4		
MB 160-295966/1-A	Method Blank	86.7	87.9		

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr (C) (40-110)	Y (40-110)		
440-178167-M-1-E MS	Matrix Spike	82.1	100		
440-178167-M-1-F MSD	Matrix Spike Duplicate	80.6	105		
440-178168-1	Outfall018_20170227_Comp	81.3	93.8		
LCS 160-295967/2-A	Lab Control Sample	88.0	100		
MB 160-295967/1-A	Method Blank	77.8	97.2		

Tracer/Carrier Legend

Sr (C) = Sr Carrier

Y = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)		
440-177394-A-1-L MS	Matrix Spike	63.1		
440-177394-A-1-M MSD	Matrix Spike Duplicate	81.8		
440-178167-M-1-G MS	Matrix Spike	74.3		

TestAmerica Irvine

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Routine Outfall 018 Comp

TestAmerica Job ID: 440-178168-2

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
440-178167-M-1-H MSD	Matrix Spike Duplicate	89.0
440-178168-1	Outfall018_20170227_Comp	78.0
LCS 160-296908/2-A	Lab Control Sample	89.4
MB 160-296908/1-A	Method Blank	73.2

Tracer/Carrier Legend

U-232 = Uranium-232

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-172639-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 15, 2017

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-172639-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Arroyo_Simi_20170109_Grab	440-172639-1	N/A	Water	1/9/2017 10:30:00 AM	E1613B, E525.2, E608, SM2340, SM2540D, 9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratories for sample delivery group (SDG) 440-172639-1:

- The laboratories received the samples in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratories received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.
- Samples for method 1613B analysis were subcontracted to TA-Sacramento.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. EPA METHOD 1613B — DIOXIN/FURANS

L. Calvin of MEC^X reviewed the SDG on March 15, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for Dioxins and Furans* (DVP-19, Rev. 0), *USEPA Method 1613B*, and the *National Functional Guidelines Chlorinated Dioxin/Furan Data Review* (2011).

III.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted and analyzed within one year of collection.

III.2. INSTRUMENT PERFORMANCE

Instrument performance criteria were met. Following are findings associated with instrument performance:

III.2.1. GC COLUMN PERFORMANCE

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was analyzed prior to the initial calibration sequence and at the beginning of each analytical sequence. The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%.

III.2.2. MASS SPECTROMETER PERFORMANCE

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000.

III.3. CALIBRATION

Calibration criteria were met. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 15 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the two native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the Method 1613B control limits for all standards.

Continuing Calibration: Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of the analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613B. The ion abundance ratios and relative retention times were within the method control limits.

III.4. QUALITY CONTROL SAMPLES

III.4.1. METHOD BLANKS

The method blank had detects above the EDL and below the reporting limit for all isomers except 2,3,7,8-TCDD and 2,3,7,8-TCDF and for all totals except TCDD. Isomer results for the method blank contaminants detected below the reporting limit were qualified as nondetects (U) at the level of contamination based upon professional judgement and the guidance for blank qualification in the National Functional Guidelines for Dioxin Review. The reviewer verified that peaks comprising totals HpCDD, PeCDD, and TCDF in the method blank were the same peaks comprising the totals in sample Arroyo_Simi_20170109_Grab. The result for totals HPCDD, PeCDD, and TCDF were qualified as nondetected (U). The reviewer verified that



peaks comprising the remaining total results in the sample included more peaks than the method blank totals. The remaining totals were therefore qualified as estimated (J) at the level of contamination.

III.4.2. LABORATORY CONTROL SAMPLES

Recoveries were within the acceptance criteria listed in Table 6 of Method 1613B, and RPDs were within the laboratory control limit of $\leq 50\%$.

III.5. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

III.6. INTERNAL STANDARDS PERFORMANCE

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613B.

III.7. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613B. A confirmation analysis was performed for the 2,3,7,8-TCDF detect in the initial analysis of the sample. The initial result was not confirmed, and was therefore rejected (R) in favor of the nondetected confirmation result.

III.8. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified by recalculating a representative number of sample results. The laboratory calculated and reported compound-specific detection limits. Detects between the EDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the EDL. Per client request, results below the EDL meeting retention time and signal to noise (S/N) criteria were to be reported; however, this sample had no reported detects below the EDL. Totals HxCDD, HxCDF, and PeCDF containing EMPC peaks were qualified as estimated (J).

IV. METHOD SM2340B—HARDNESS

Marcia Hilchey of MEC^x reviewed the SDG on March 16, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Metals (DVP-5, Rev. 2)*, *Standard Method 2340B*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

IV.1. HOLDING TIMES

The analytical holding time, six months for metals, was met.

IV.2. MS TUNING AND CALIBRATION

Instrument tune is not applicable to this method.

ICP instrument calibration criteria were met for calcium and magnesium. The initial calibration r values (when appropriate) were ≥ 0.995 , y-intercepts were below the CRQL, and %Ds were $< 30\%$. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries for the remaining analytes were within NFG control limits of 90-110%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. METHOD BLANKS

There were no target analyte detections in the method blank and calibration blanks.

IV.3.2. INTERFERENCE CHECK SAMPLES:

ICP-AES recoveries were within the control limits of 80-120% or $\pm 2x$ the reporting limit, whichever is greater. As the target analytes utilized in the calculation of hardness were spiked interferences, the sample was not assessed for matrix interference.

IV.3.3. LABORATORY CONTROL SAMPLES

Laboratory control samples recoveries were within the method control limits of 85-115%.

IV.3.4. LABORATORY DUPLICATES:

Laboratory duplicate analyses were not performed on a sample in this SDG.

IV.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

IV.4. SERIAL DILUTION

No serial dilution analyses were performed on a sample in this SDG.

IV.5. INTERNAL STANDARDS PERFORMANCE

Internal standard recoveries are not applicable to this method.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the sample results reported on the sample result summary were verified against the raw data. No transcription errors or calculation errors were noted.

IV.7. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

IV.7.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

IV.7.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

V. METHOD ANALYSIS – 608 PESTICIDES

L. Calvin of MEC^x reviewed the SDG on March 16, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^x Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1)*, *EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

V.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

V.2. CALIBRATION

The initial calibrations had %RSDs of $\leq 10\%$ or r^2 of ≥ 0.990 on both analytical columns. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of $\leq 15\%$, with the exception of two of five peaks with %Ds of -17.2% and -18.8% in the chlordane ICV. The sample result was qualified as an estimated nondetect (UJ).

V.3. QUALITY CONTROL SAMPLES

V.3.1 METHOD BLANKS

Target compounds were not detected in method blank.

V.3.2 LABORATORY CONTROL SAMPLES

Recoveries and RPDs were within the laboratory control limits. Chlordane and toxaphene were not spiked in the LCS/LCSD.

V.3.3 SURROGATE RECOVERY

Surrogate tetrachloro-m-xylene (TCMX) was recovered within the laboratory control limits of 10-150%.

V.3.4 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample of this SDG. MEC^x evaluated method accuracy and precision based on the LCS/LCSD results.

V.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

V.4.1 FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

V.4.2 FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

V.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatogram and retention times indicated no problems with target compound identification. The laboratory analyzed for select pesticides by Method 608.

V.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

VI. EPA METHODS 525.2— SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

L. Calvin of MEC^x reviewed the SDG on March 16, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for Semivolatile Organics (DVP-3, Rev. 1)*, *EPA Method 525.2*, and the *National Functional Guidelines for Superfund Organic Methods Data Review (2014)*.

VI.1. HOLDING TIMES

Extraction and analytical holding times were met. The water sample was extracted within 24 hours of collection and analyzed within 30 days of extraction.

VI.2. GC/MS TUNING AND CALIBRATION

The DFTPP tunes met the method abundance criteria. The sample was analyzed within 12 hours of the DFTPP injection time.

Calibration criteria were met. The initial calibration average RRFs were ≥ 0.05 and %RSDs $\leq 30\%$. The continuing calibration RRFs were ≥ 0.05 and recoveries were within the method QC limits of 70-130%.

VI.3. QUALITY CONTROL SAMPLES

VI.3.1. METHOD BLANKS

Target compounds were not detected in the method blank.

VI.3.2. LABORATORY CONTROL SAMPLES

The recoveries and RPDs were within the control limits of 70-130% and $\leq 30\%$, respectively.

VI.3.3. SURROGATE RECOVERY

Recoveries were within laboratory-established control limits of 70-130%.

VI.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG. MEC^x evaluated method accuracy and precision based on the LCS/LCSD results.

VI.4. FIELD QC SAMPLES

MEC^x evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^x used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

VI.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VI.4.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

VI.5. INTERNAL STANDARDS PERFORMANCE

The internal standard area counts were within the method control limits established by the continuing calibration standards of $\pm 30\%$ for areas and ± 10 seconds for retention times.

VI.6. COMPOUND IDENTIFICATION

Compound identification was verified. The laboratory analyzed for chlorpyrifos and diazinon by Method 525.2. Review of the sample chromatogram, retention times, and spectra indicated no problems with target compound identification.

VI.7. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit.

The case narrative for this SDG indicated the extracted sample volume of 500 milliliters was less than the normal extraction volume of 1000 milliliters due to the nature of the sample matrix. Reporting limits were adjusted accordingly.

VI.8. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The laboratory did not report TICs for this SDG.

VI.9. SYSTEM PERFORMANCE

Review of the raw data indicated no problems with system performance.

VII. VARIOUS METHODS — GENERAL CHEMISTRY

Marcia Hilchey of MEC^x reviewed the SDG on March 16, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^x *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 2540D and 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

VII.1. HOLDING TIMES

The analytical holding times as listed below were met:

- 8 hours for *E. coli*
- 7 days for total suspended solids (TSS)

VII.2. CALIBRATION

Calibration criteria were met. Analytical balance calibration logs were provided by the laboratory. Biological controls were acceptable.

VII.3. QUALITY CONTROL SAMPLES

VII.3.1. METHOD BLANKS

The TSS method blank had no detection. The method blank is not applicable to the biological method. The negative control sample was acceptable.

VII.3.2. LABORATORY CONTROL SAMPLES

Laboratory control sample recovery for TSS was within the laboratory control limits. The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

VII.3.3. LABORATORY DUPLICATES

Laboratory duplicate analysis was performed on the sample in this SDG. The RPD met the laboratory acceptance limit.

VII.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

VII.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted.

VII.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

VII.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

VII.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401726391

Analysis Method E1613B

Sample Name Arroyo_simi_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-172639-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	N	39001-02-0	0.000011	0.00010	0.00000025	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	N	3268-87-9	0.000097	0.00010	0.00000038	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	N	67562-39-4	0.0000052	0.000051	0.00000022	ug/L	J,DXMB	U	B
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	N	35822-46-9	0.000011	0.000051	0.00000038	ug/L	J,DXMB	U	B
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	N	55673-89-7	0.0000012	0.000051	0.00000028	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	N	70648-26-9	0.00000091	0.000051	0.00000023	ug/L	J,DXMB	U	B
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	39227-28-6	0.00000078	0.000051	0.00000015	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	57117-44-9	0.00000077	0.000051	0.00000022	ug/L	J,DXMB	U	B
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	N	57653-85-7	0.00000099	0.000051	0.00000016	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	N	72918-21-9	0.00000082	0.000051	0.00000019	ug/L	J,DXMB	U	B
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	N	19408-74-3	0.0000011	0.000051	0.00000012	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-41-6	0.00000049	0.000051	0.00000018	ug/L	J,DXMB	U	B
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	N	40321-76-4	0.00000051	0.000051	0.00000023	ug/L	J,DXMB	U	B
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	N	60851-34-5	0.00000084	0.000051	0.00000019	ug/L	J,DXMB	U	B
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	N	57117-31-4	0.00000048	0.000051	0.00000019	ug/L	J,DXMB	U	B
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	0.00000067	0.000010	0.00000016	ug/L	J,DXMB	R	D
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	N	51207-31-9	ND	0.000010	0.0000014	ug/L	U	U	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	N	1746-01-6	ND	0.000010	0.00000021	ug/L	U	U	
Total Heptachlorodibenzofuran (HpCDF)	N	38998-75-3	0.000011	0.000051	0.00000025	ug/L	J,DXMB	J	B, DNQ
Total Heptachlorodibenzo-p-dioxin (HpCDD)	N	37871-00-4	0.000023	0.000051	0.00000038	ug/L	J,DXMB	U	B
Total Hexachlorodibenzofuran (HxCDF)	N	55684-94-1	0.0000052	0.000051	0.00000021	ug/L	J,DXqMB	J	B, DNQ, *III
Total Hexachlorodibenzo-p-dioxin (HxCDD), Mixture	N	34465-46-8	0.0000044	0.000051	0.00000015	ug/L	J,DXqMB	J	B, DNQ, *III

Analysis Method E1613B

Total Pentachlorodibenzofuran (PeCDF)	N	30402-15-4	0.0000019	0.000051	0.00000018	ug/L	J,DXqMB	J	B, DNQ, *III
Total Pentachlorodibenzo-p-dioxin (PeCDD)	N	36088-22-9	0.00000051	0.000051	0.00000023	ug/L	J,DXMB	U	B
Total Tetrachlorodibenzofuran (TCDF)	N	55722-27-5	0.0000011	0.000010	0.00000016	ug/L	J,DXMB	U	B
Total Tetrachlorodibenzo-p-dioxin (TCDD)	N	41903-57-5	ND	0.000010	0.00000021	ug/L	U	U	

Analysis Method E525.2

Sample Name Arroyo_simi_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-172639-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chlorpyrifos	N	2921-88-2	ND	2.0	1.0	ug/L	U	U	
Diazinon	N	333-41-5	ND	0.50	0.24	ug/L	U	U	

Analysis Method E608

Sample Name Arroyo_simi_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-172639-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8	ND	0.0050	0.0040	ug/L	U	U	
4,4'-DDE	N	72-55-9	ND	0.0050	0.0030	ug/L	U	U	
4,4'-DDT	N	50-29-3	ND	0.010	0.0040	ug/L	U	U	
Chlordane	N	57-74-9	ND	0.10	0.080	ug/L	U	UJ	C
Dieldrin	N	60-57-1	ND	0.0050	0.0020	ug/L	U	U	
Toxaphene	N	8001-35-2	ND	0.50	0.25	ug/L	U	U	

Analysis Method SM2340

Sample Name Arroyo_simi_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-172639-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCAC O3	190	0.33	0.17	mg/L			

Analysis Method *SM2540D*

Sample Name Arroyo_simi_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-172639-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	840	50	25	mg/L			

Analysis Method *SM9221F*

Sample Name Arroyo_simi_20170109_Grab **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/9/2017 10:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-172639-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	8000	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

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Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-172639-1

Client Project/Site: Annual Arroyo Simi-frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/29/2017 8:04:18 PM

Urvashi Patel, Manager of Project Management

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/29/2017 8:04:18 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-172639-1	Arroyo Simi_20170109_Grab	Water	01/09/17 10:30	01/09/17 14:20

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Job ID: 440-172639-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-172639-1

Comments

No additional comments.

Receipt

The samples were received on 1/9/2017 2:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.5° C, 1.7° C, 1.9° C, 2.0° C, 2.1° C, 2.3° C, 2.9° C and 3.1° C.

Receipt Exceptions

No additional comments.

GC/MS Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 440-380654 and analytical batch 440-381025. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method(s) 525.2: The following sample was diluted due to the nature of the sample matrix: Arroyo Simi_20170109_Grab (440-172639-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Dioxin Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Client Sample ID: Arroyo Simi_20170109_Grab

Lab Sample ID: 440-172639-1

Date Collected: 01/09/17 10:30

Matrix: Water

Date Received: 01/09/17 14:20

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		2.0	1.0	ug/L		01/10/17 07:30	01/11/17 08:50	1
Diazinon	ND		0.50	0.24	ug/L		01/10/17 07:30	01/11/17 08:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	99		70 - 130				01/10/17 07:30	01/11/17 08:50	1
Perylene-d12	94		70 - 130				01/10/17 07:30	01/11/17 08:50	1
Triphenylphosphate	128		70 - 130				01/10/17 07:30	01/11/17 08:50	1

Method: 608 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		01/09/17 07:51	01/12/17 21:05	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/09/17 07:51	01/12/17 21:05	1
Toxaphene	ND		0.50	0.25	ug/L		01/09/17 07:51	01/12/17 21:05	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/09/17 07:51	01/12/17 21:05	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/09/17 07:51	01/12/17 21:05	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/09/17 07:51	01/12/17 21:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	62		10 - 150				01/09/17 07:51	01/12/17 21:05	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,7,8-PeCDD	0.00000051	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,7,8-PeCDF	0.00000049	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
2,3,4,7,8-PeCDF	0.00000048	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,4,7,8-HxCDD	0.00000078	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,6,7,8-HxCDD	0.00000099	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,7,8,9-HxCDD	0.0000011	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,4,7,8-HxCDF	0.00000091	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,6,7,8-HxCDF	0.00000077	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,7,8,9-HxCDF	0.00000082	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
2,3,4,6,7,8-HxCDF	0.00000084	J,DX MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,4,6,7,8-HpCDD	0.000011	J,DX MB	0.000051	0.0000003	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,4,6,7,8-HpCDF	0.0000052	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
1,2,3,4,7,8,9-HpCDF	0.0000012	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
OCDD	0.000097	J,DX MB	0.00010	0.0000003	ug/L		01/13/17 08:17	01/14/17 02:28	1
OCDF	0.000011	J,DX MB	0.00010	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Client Sample ID: Arroyo Simi_20170109_Grab

Lab Sample ID: 440-172639-1

Date Collected: 01/09/17 10:30

Matrix: Water

Date Received: 01/09/17 14:20

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
Total TCDD	ND		0.000010	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total TCDF	0.0000011	J,DX MB	0.000010	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total PeCDD	0.00000051	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total PeCDF	0.0000019	J,DX q MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total HxCDD	0.0000044	J,DX q MB	0.000051	0.0000001	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total HxCDF	0.0000052	J,DX q MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total HpCDD	0.000023	J,DX MB	0.000051	0.0000003	ug/L		01/13/17 08:17	01/14/17 02:28	1
Total HpCDF	0.000011	J,DX MB	0.000051	0.0000002	ug/L		01/13/17 08:17	01/14/17 02:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	66		25 - 164	01/13/17 08:17	01/14/17 02:28	1
13C-2,3,7,8-TCDF	66		24 - 169	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,7,8-PeCDD	77		25 - 181	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,7,8-PeCDF	73		24 - 185	01/13/17 08:17	01/14/17 02:28	1
13C-2,3,4,7,8-PeCDF	82		21 - 178	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,4,7,8-HxCDD	82		32 - 141	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,6,7,8-HxCDD	79		28 - 130	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,4,7,8-HxCDF	82		26 - 152	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,6,7,8-HxCDF	79		26 - 123	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,7,8,9-HxCDF	73		29 - 147	01/13/17 08:17	01/14/17 02:28	1
13C-2,3,4,6,7,8-HxCDF	81		28 - 136	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,4,6,7,8-HpCDD	78		23 - 140	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,4,6,7,8-HpCDF	86		28 - 143	01/13/17 08:17	01/14/17 02:28	1
13C-1,2,3,4,7,8,9-HpCDF	83		26 - 138	01/13/17 08:17	01/14/17 02:28	1
13C-OCDD	76		17 - 157	01/13/17 08:17	01/14/17 02:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	89		35 - 197	01/13/17 08:17	01/14/17 02:28	1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF	ND		0.000010	0.0000014	ug/L		01/13/17 08:17	01/16/17 15:23	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C-2,3,7,8-TCDF	69		24 - 169	01/13/17 08:17	01/16/17 15:23	1			
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
37Cl4-2,3,7,8-TCDD	87		35 - 197	01/13/17 08:17	01/16/17 15:23	1			

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	190		0.33	0.17	mg/L			01/23/17 16:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	840		50	25	mg/L			01/11/17 16:18	1

TestAmerica Irvine

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Client Sample ID: Arroyo Simi_20170109_Grab

Lab Sample ID: 440-172639-1

Date Collected: 01/09/17 10:30

Matrix: Water

Date Received: 01/09/17 14:20

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	8000		1.8	1.8	MPN/100mL			01/09/17 16:23	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
1613B	Dioxins and Furans (HRGC/HRMS)	40CFR136A	TAL SAC
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV
PCB-LL- Lancaster Labs	General Sub Contract Method	NONE	SC0103

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
NONE = NONE
SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

SC0103 = Lancaster Laboratories, 2425 New Holland Pike, Lancaster, PA 17601
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022
TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Client Sample ID: Arroyo Simi_20170109_Grab

Lab Sample ID: 440-172639-1

Date Collected: 01/09/17 10:30

Matrix: Water

Date Received: 01/09/17 14:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	525.2			500 mL	1 mL	380936	01/10/17 07:30	FTD	TAL IRV
Total/NA	Analysis	525.2		1			381159	01/11/17 08:50	MF	TAL IRV
Total/NA	Prep	608			995 mL	2 mL	380654	01/09/17 07:51	L2A	TAL IRV
Total/NA	Analysis	608		1			381502	01/12/17 21:05	KS	TAL IRV
Total/NA	Prep	1613B			980.1 mL	20 uL	146219	01/13/17 08:17	DXD	TAL SAC
Total/NA	Analysis	1613B		1			146365	01/14/17 02:28	SMA	TAL SAC
Total/NA	Prep	1613B	RA		980.1 mL	20 uL	146219	01/13/17 08:17	DXD	TAL SAC
Total/NA	Analysis	1613B	RA	1			146574	01/16/17 15:23	ALM	TAL SAC
Total Recoverable	Analysis	SM 2340B		1			383911	01/23/17 16:58	A1S	TAL IRV
Total/NA	Analysis	SM 2540D		1	20 mL	1000 mL	381309	01/11/17 16:18	MMH	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	381820		KRW	TAL IRV
							(Start)	01/09/17 16:23		
							(End)	01/12/17 16:40		

Laboratory References:

SC0103 = Lancaster Laboratories, 2425 New Holland Pike, Lancaster, PA 17601

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-380936/1-A
Matrix: Water
Analysis Batch: 381159

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 380936

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorpyrifos	ND		1.0	0.50	ug/L		01/10/17 07:30	01/11/17 06:59	1
Diazinon	ND		0.25	0.12	ug/L		01/10/17 07:30	01/11/17 06:59	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,3-Dimethyl-2-nitrobenzene	95		70 - 130	01/10/17 07:30	01/11/17 06:59	1
Perylene-d12	93		70 - 130	01/10/17 07:30	01/11/17 06:59	1
Triphenylphosphate	90		70 - 130	01/10/17 07:30	01/11/17 06:59	1

Lab Sample ID: LCS 440-380936/2-A
Matrix: Water
Analysis Batch: 381159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 380936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chlorpyrifos	5.00	4.68		ug/L		94	70 - 130
Diazinon	5.00	3.99		ug/L		80	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	94		70 - 130
Perylene-d12	93		70 - 130
Triphenylphosphate	115		70 - 130

Lab Sample ID: LCSD 440-380936/3-A
Matrix: Water
Analysis Batch: 381159

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 380936

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Chlorpyrifos	5.00	5.24		ug/L		105	70 - 130	11	30
Diazinon	5.00	4.07		ug/L		81	70 - 130	2	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,3-Dimethyl-2-nitrobenzene	95		70 - 130
Perylene-d12	94		70 - 130
Triphenylphosphate	105		70 - 130

Method: 608 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-380654/1-A
Matrix: Water
Analysis Batch: 381025

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 380654

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		01/09/17 07:51	01/10/17 12:28	1
Dieldrin	ND		0.0050	0.0020	ug/L		01/09/17 07:51	01/10/17 12:28	1
Toxaphene	ND		0.50	0.25	ug/L		01/09/17 07:51	01/10/17 12:28	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		01/09/17 07:51	01/10/17 12:28	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		01/09/17 07:51	01/10/17 12:28	1
4,4'-DDT	ND		0.010	0.0040	ug/L		01/09/17 07:51	01/10/17 12:28	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	90		10 - 150	01/09/17 07:51	01/10/17 12:28	1

Lab Sample ID: LCS 440-380654/2-A
Matrix: Water
Analysis Batch: 381025

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 380654

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	RPD
Dieldrin	0.200	0.228		ug/L		114	36 - 146	
4,4'-DDD	0.200	0.230		ug/L		115	31 - 141	
4,4'-DDE	0.200	0.239		ug/L		119	30 - 145	
4,4'-DDT	0.200	0.194		ug/L		97	25 - 150	

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	93		10 - 150

Lab Sample ID: LCSD 440-380654/3-A
Matrix: Water
Analysis Batch: 381025

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 380654

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Dieldrin	0.200	0.216		ug/L		108	36 - 146	5	35	
4,4'-DDD	0.200	0.228		ug/L		114	31 - 141	1	35	
4,4'-DDE	0.200	0.226		ug/L		113	30 - 145	6	35	
4,4'-DDT	0.200	0.185		ug/L		92	25 - 150	5	35	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	60		10 - 150

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-146219/1-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 146219

Analyte	MB MB		RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
2,3,7,8-TCDD	ND		0.000010	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,7,8-PeCDD	0.00000149	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,7,8-PeCDF	0.00000137	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
2,3,4,7,8-PeCDF	0.00000138	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,4,7,8-HxCDD	0.00000165	J,DX	0.000050	0.0000001	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,6,7,8-HxCDD	0.00000182	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,7,8,9-HxCDD	0.00000163	J,DX q	0.000050	0.0000001	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,4,7,8-HxCDF	0.00000169	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,6,7,8-HxCDF	0.00000220	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,7,8,9-HxCDF	0.00000210	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: MB 320-146219/1-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 146219

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,6,7,8-HxCDF	0.0000191	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,4,6,7,8-HpCDD	0.0000320	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,4,6,7,8-HpCDF	0.0000239	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
1,2,3,4,7,8,9-HpCDF	0.0000191	J,DX	0.000050	0.0000003	ug/L		01/13/17 08:17	01/14/17 00:10	1
OCDD	0.0000854	J,DX	0.00010	0.0000003	ug/L		01/13/17 08:17	01/14/17 00:10	1
OCDF	0.0000586	J,DX	0.00010	0.0000003	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total TCDD	ND		0.000010	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total TCDF	0.0000151	J,DX q	0.000010	0.0000001	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total PeCDD	0.0000149	J,DX	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total PeCDF	0.0000275	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total HxCDD	0.0000509	J,DX q	0.000050	0.0000001	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total HxCDF	0.0000790	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total HpCDD	0.0000450	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1
Total HpCDF	0.0000430	J,DX q	0.000050	0.0000002	ug/L		01/13/17 08:17	01/14/17 00:10	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	53		25 - 164	01/13/17 08:17	01/14/17 00:10	1
13C-2,3,7,8-TCDF	55		24 - 169	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,7,8-PeCDD	60		25 - 181	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,7,8-PeCDF	58		24 - 185	01/13/17 08:17	01/14/17 00:10	1
13C-2,3,4,7,8-PeCDF	64		21 - 178	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,7,8-HxCDD	65		32 - 141	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,6,7,8-HxCDD	65		28 - 130	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,7,8-HxCDF	65		26 - 152	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,6,7,8-HxCDF	64		26 - 123	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,7,8,9-HxCDF	54		29 - 147	01/13/17 08:17	01/14/17 00:10	1
13C-2,3,4,6,7,8-HxCDF	64		28 - 136	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,6,7,8-HpCDD	58		23 - 140	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,6,7,8-HpCDF	65		28 - 143	01/13/17 08:17	01/14/17 00:10	1
13C-1,2,3,4,7,8,9-HpCDF	58		26 - 138	01/13/17 08:17	01/14/17 00:10	1
13C-OCDD	54		17 - 157	01/13/17 08:17	01/14/17 00:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
37Cl4-2,3,7,8-TCDD	90		35 - 197	01/13/17 08:17	01/14/17 00:10	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-146219/2-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 146219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2,3,7,8-TCDD	0.000200	0.000196		ug/L		98	67 - 158
2,3,7,8-TCDF	0.000200	0.000199	MB	ug/L		100	75 - 158
1,2,3,7,8-PeCDD	0.00100	0.000990	MB	ug/L		99	70 - 142
1,2,3,7,8-PeCDF	0.00100	0.000952	MB	ug/L		95	80 - 134
2,3,4,7,8-PeCDF	0.00100	0.000992	MB	ug/L		99	68 - 160
1,2,3,4,7,8-HxCDD	0.00100	0.000951	MB	ug/L		95	70 - 164
1,2,3,6,7,8-HxCDD	0.00100	0.000977	MB	ug/L		98	76 - 134
1,2,3,7,8,9-HxCDD	0.00100	0.000837	MB	ug/L		84	64 - 162
1,2,3,4,7,8-HxCDF	0.00100	0.000927	MB	ug/L		93	72 - 134
1,2,3,6,7,8-HxCDF	0.00100	0.000974	MB	ug/L		97	84 - 130
1,2,3,7,8,9-HxCDF	0.00100	0.000958	MB	ug/L		96	78 - 130
2,3,4,6,7,8-HxCDF	0.00100	0.000974	MB	ug/L		97	70 - 156
1,2,3,4,6,7,8-HpCDD	0.00100	0.000967	MB	ug/L		97	70 - 140
1,2,3,4,6,7,8-HpCDF	0.00100	0.000961	MB	ug/L		96	82 - 122
1,2,3,4,7,8,9-HpCDF	0.00100	0.000922	MB	ug/L		92	78 - 138
OCDD	0.00200	0.00184	MB	ug/L		92	78 - 144
OCDF	0.00200	0.00184	MB	ug/L		92	63 - 170

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-2,3,7,8-TCDD	57		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	66		21 - 227
13C-1,2,3,7,8-PeCDF	64		21 - 192
13C-2,3,4,7,8-PeCDF	71		13 - 328
13C-1,2,3,4,7,8-HxCDD	65		21 - 193
13C-1,2,3,6,7,8-HxCDD	66		25 - 163
13C-1,2,3,4,7,8-HxCDF	69		19 - 202
13C-1,2,3,6,7,8-HxCDF	66		21 - 159
13C-1,2,3,7,8,9-HxCDF	56		17 - 205
13C-2,3,4,6,7,8-HxCDF	67		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	55		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	61		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	57		20 - 186
13C-OCDD	52		13 - 199

Surrogate	LCS %Recovery	LCS Qualifier	Limits
37Cl4-2,3,7,8-TCDD	99		31 - 191

Lab Sample ID: LCSD 320-146219/3-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 146219

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
2,3,7,8-TCDD	0.000200	0.000201		ug/L		100	67 - 158	2	50
2,3,7,8-TCDF	0.000200	0.000204	MB	ug/L		102	75 - 158	2	50
1,2,3,7,8-PeCDD	0.00100	0.00104	MB	ug/L		104	70 - 142	5	50
1,2,3,7,8-PeCDF	0.00100	0.00103	MB	ug/L		103	80 - 134	8	50
2,3,4,7,8-PeCDF	0.00100	0.000945	MB	ug/L		94	68 - 160	5	50

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-146219/3-A
Matrix: Water
Analysis Batch: 146365

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 146219

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3,4,7,8-HxCDD	0.00100	0.000956	MB	ug/L		96	70 - 164	1	50
1,2,3,6,7,8-HxCDD	0.00100	0.000989	MB	ug/L		99	76 - 134	1	50
1,2,3,7,8,9-HxCDD	0.00100	0.000836	MB	ug/L		84	64 - 162	0	50
1,2,3,4,7,8-HxCDF	0.00100	0.000955	MB	ug/L		95	72 - 134	3	50
1,2,3,6,7,8-HxCDF	0.00100	0.00101	MB	ug/L		101	84 - 130	3	50
1,2,3,7,8,9-HxCDF	0.00100	0.000991	MB	ug/L		99	78 - 130	3	50
2,3,4,6,7,8-HxCDF	0.00100	0.00102	MB	ug/L		102	70 - 156	5	50
1,2,3,4,6,7,8-HpCDD	0.00100	0.000982	MB	ug/L		98	70 - 140	2	50
1,2,3,4,6,7,8-HpCDF	0.00100	0.000958	MB	ug/L		96	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF	0.00100	0.000945	MB	ug/L		95	78 - 138	2	50
OCDD	0.00200	0.00190	MB	ug/L		95	78 - 144	3	50
OCDF	0.00200	0.00189	MB	ug/L		95	63 - 170	3	50

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C-2,3,7,8-TCDD	57		20 - 175
13C-2,3,7,8-TCDF	59		22 - 152
13C-1,2,3,7,8-PeCDD	67		21 - 227
13C-1,2,3,7,8-PeCDF	61		21 - 192
13C-2,3,4,7,8-PeCDF	73		13 - 328
13C-1,2,3,4,7,8-HxCDD	76		21 - 193
13C-1,2,3,6,7,8-HxCDD	71		25 - 163
13C-1,2,3,4,7,8-HxCDF	74		19 - 202
13C-1,2,3,6,7,8-HxCDF	69		21 - 159
13C-1,2,3,7,8,9-HxCDF	63		17 - 205
13C-2,3,4,6,7,8-HxCDF	71		22 - 176
13C-1,2,3,4,6,7,8-HpCDD	69		26 - 166
13C-1,2,3,4,6,7,8-HpCDF	73		21 - 158
13C-1,2,3,4,7,8,9-HpCDF	69		20 - 186
13C-OCDD	62		13 - 199

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
37Cl4-2,3,7,8-TCDD	88		31 - 191

Method: 1613B - Dioxins and Furans (HRGC/HRMS) - RA

Lab Sample ID: MB 320-146219/1-A
Matrix: Water
Analysis Batch: 146574

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 146219

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDF - RA	ND		0.000010	0.0000014	ug/L		01/13/17 08:17	01/16/17 14:45	1

Isotope Dilution	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-2,3,7,8-TCDF - RA	57		24 - 169	01/13/17 08:17	01/16/17 14:45	1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
37Cl4-2,3,7,8-TCDD - RA	85		35 - 197	01/13/17 08:17	01/16/17 14:45	1

TestAmerica Irvine

QC Sample Results

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-381309/1
 Matrix: Water
 Analysis Batch: 381309

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			01/11/17 16:18	1

Lab Sample ID: LCS 440-381309/2
 Matrix: Water
 Analysis Batch: 381309

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	966		mg/L		97	85 - 115

Lab Sample ID: 440-172639-1 DU
 Matrix: Water
 Analysis Batch: 381309

Client Sample ID: Arroyo Simi_20170109_Grab
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	840		825		mg/L		2	10

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

GC/MS Semi VOA

Prep Batch: 380936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	525.2	
MB 440-380936/1-A	Method Blank	Total/NA	Water	525.2	
LCS 440-380936/2-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 440-380936/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	

Analysis Batch: 381159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	525.2	380936
MB 440-380936/1-A	Method Blank	Total/NA	Water	525.2	380936
LCS 440-380936/2-A	Lab Control Sample	Total/NA	Water	525.2	380936
LCSD 440-380936/3-A	Lab Control Sample Dup	Total/NA	Water	525.2	380936

GC Semi VOA

Prep Batch: 380654

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	608	
MB 440-380654/1-A	Method Blank	Total/NA	Water	608	
LCS 440-380654/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-380654/3-A	Lab Control Sample Dup	Total/NA	Water	608	

Analysis Batch: 381025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-380654/1-A	Method Blank	Total/NA	Water	608	380654
LCS 440-380654/2-A	Lab Control Sample	Total/NA	Water	608	380654
LCSD 440-380654/3-A	Lab Control Sample Dup	Total/NA	Water	608	380654

Analysis Batch: 381502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	608	380654

Specialty Organics

Prep Batch: 146219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	1613B	
440-172639-1 - RA	Arroyo Simi_20170109_Grab	Total/NA	Water	1613B	
MB 320-146219/1-A	Method Blank	Total/NA	Water	1613B	
MB 320-146219/1-A - RA	Method Blank	Total/NA	Water	1613B	
LCS 320-146219/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-146219/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 146365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	1613B	146219
MB 320-146219/1-A	Method Blank	Total/NA	Water	1613B	146219
LCS 320-146219/2-A	Lab Control Sample	Total/NA	Water	1613B	146219
LCSD 320-146219/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	146219

TestAmerica Irvine

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Specialty Organics (Continued)

Analysis Batch: 146574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1 - RA	Arroyo Simi_20170109_Grab	Total/NA	Water	1613B	146219
MB 320-146219/1-A - RA	Method Blank	Total/NA	Water	1613B	146219

Metals

Analysis Batch: 383911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total Recoverable	Water	SM 2340B	

General Chemistry

Analysis Batch: 381309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	SM 2540D	
MB 440-381309/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-381309/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-172639-1 DU	Arroyo Simi_20170109_Grab	Total/NA	Water	SM 2540D	

Biology

Analysis Batch: 381820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-172639-1	Arroyo Simi_20170109_Grab	Total/NA	Water	SM 9221F	

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Qualifiers

Dioxin

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL
MB	Analyte present in the method blank
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17 *
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

* Certification renewal pending - certification considered valid.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Test America
17461 Derian Ave
Suite #100
Irvine CA 92614

Report Date: January 20, 2017

Project: Annual Arroyo Simi-frontier ParkSubmission Date: 01/13/2017
Group Number: 1754308
SDG: SSF02
PO Number: 440-172639-1
State of Sample Origin: CA

Lancaster Labs

Client Sample Description

Arroyo Simi_20170109_Grab (440-172639-1) Grab

(LL) #
8787182

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Test America

Attn: Urvashi Patel

Respectfully Submitted,



Kay Hower

(510) 672-3979

Sample Description: Arroyo Simi_20170109_Grab (440-172639-1) Grab
Water
Annual Arroyo Simi-frontier Park

LL Sample # WW 8787182
LL Group # 1754308
Account # 41440

Project Name: Annual Arroyo Simi-frontier Park

Collected: 01/09/2017 10:30

Test America

Submitted: 01/13/2017 10:25

17461 Derian Ave

Reported: 01/20/2017 11:09

Suite #100

Irvine CA 92614

SIMI- SDG#: SSF02-01

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Pesticides/PCBs		EPA 608	ug/l	ug/l	ug/l	
06030	PCB-1016	12674-11-2	N.D.	0.10	0.51	1
06030	PCB-1221	11104-28-2	N.D.	0.10	0.51	1
06030	PCB-1232	11141-16-5	N.D.	0.10	0.51	1
06030	PCB-1242	53469-21-9	N.D.	0.10	0.51	1
06030	PCB-1248	12672-29-6	N.D.	0.10	0.51	1
06030	PCB-1254	11097-69-1	N.D.	0.10	0.51	1
06030	PCB-1260	11096-82-5	N.D.	0.15	0.51	1

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06030	PCBs in Water by 608	EPA 608	1	170160006A	01/19/2017 00:13	Jessica L Miller	1
11960	Method 608 PCB Water Ext.	EPA 608	1	170160006A	01/16/2017 20:35	Karen L Beyer	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: Test America
Reported: 01/20/2017 11:09

Group Number: 1754308

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL**	LOQ
	ug/l	ug/l	ug/l
Batch number: 170160006A	Sample number(s): 8787182		
PCB-1016	N.D.	0.10	0.50
PCB-1221	N.D.	0.10	0.50
PCB-1232	N.D.	0.10	0.50
PCB-1242	N.D.	0.10	0.50
PCB-1248	N.D.	0.10	0.50
PCB-1254	N.D.	0.10	0.50
PCB-1260	N.D.	0.15	0.50

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: 170160006A	Sample number(s): 8787182								
PCB-1016	5.04	4.56	5.04	4.30	90	85	60-117	6	30
PCB-1260	5.02	4.94	5.02	4.50	98	90	57-134	9	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: PCBs in Water by 608
Batch number: 170160006A

	Tetrachloro-m-xylene	Decachlorobiphenyl
8787182	88	83
Blank	97	95
LCS	99	89
LCSD	91	86
Limits:	33-137	10-148

*- Outside of specification

** - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

A-41440
 G-1754308
 S-8787187

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:	
Client Contact:		Phone:	E-Mail:	State of Origin:	Page:	
Shipping/Receiving		urvashi.patel@testamericainc.com		California	Page 1 of 1	
Company:			Accreditations Required (See note):		Job #:	
Eurofins Lancaster Laboratories Env LLC					440-172639-1	
Address:		Due Date Requested:	Analysis Requested			Preservation Codes:
2425 New Holland Pike,		1/20/2017				
City:		TAT Requested (days):	Field Filtered Sample (Yes or No)	Total Number of Containers	A - HCL M - Hexane	
Lancaster					B - NaOH N - None	
State, Zip:		PO #:			C - Zn Acetate O - AsNaO2	
PA, 17601		WO #:			D - Nitric Acid P - Na2O4S	
Phone:		Project #:	E - NaHSO4 Q - Na2SO3		F - MeOH R - Na2S2O3	
Email:		Project #:	G - Amchlor S - H2SO4		H - Ascorbic Acid T - TSP Dodecahydrate	
Project Name:		SSOW#:	I - Ice U - Acetone		J - DI Water V - MCAA	
Annual Arroyo Simi-frontier Park			K - EDTA W - pH 4-5		L - EDA Z - other (specify)	
Site:			Other:			
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Special Instructions/Note:
Arroyo Simi_20170109_Grab (440-172639-1)		1/9/17	10:30 Pacific		Water	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
Unconfirmed			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	Special Instructions/QC Requirements:		
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		1.1 °C			



Client: Test America

Delivery and Receipt Information

Delivery Method: Fed Ex Arrival Timestamp: 01/13/2017 10:25
 Number of Packages: 1 Number of Projects: 1
 State/Province of Origin: CA

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Cory Jeremiah (10469) at 17:34 on 01/13/2017

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	0.7	IR	Wet	Y	Loose	N

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	mg	milligram(s)
C	degrees Celsius	mL	milliliter(s)
cfu	colony forming units	MPN	Most Probable Number
CP Units	cobalt-chloroplatinate units	N.D.	none detected
F	degrees Fahrenheit	ng	nanogram(s)
g	gram(s)	NTU	nephelometric turbidity units
IU	International Units	pg/L	picogram/liter
kg	kilogram(s)	RL	Reporting Limit
L	liter(s)	TNTC	Too Numerous To Count
lb.	pound(s)	µg	microgram(s)
m3	cubic meter(s)	µL	microliter(s)
meq	milliequivalents	umhos/cm	micromhos/cm
<	less than		
>	greater than		
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
ppb	parts per billion		
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

Laboratory Data Qualifiers:

- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

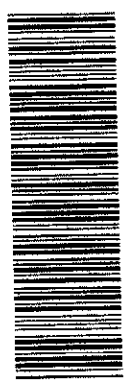
Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

CHAIN OF CUSTODY FORM

EDB0J6UX

Client Name/Address: Halley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108		Project: Boeing-SSFL NPDES Permit 2015 Annual Arroyo Simi-Frontier Park Dry Weather		Field Readings Meter serial #						
Test America Contact: Urvashi Patel 17461 Denton Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055		Project Manager: Nancy Gardiner 619.285.7132, 858.337.4061 (cell)		Field Readings: (include units) Time of Readings: 1020 pH: 7.94 pH unit Temp: 2.75 °C/F Velocity: 0.1 ft/sec						
Sampler: Daniel Ear (MARK DOMINICK)		Field Manager: Mark Dominick 618.350.7312, 818.599.0702 (cell)		Field readings QC Checked by: <i>Mark Dominick</i> Date/Time: 1-9-17/1020						
Sample Description	Sample ID	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MSMSD	Deliver to lab ASAP 8 hr hold time, Need 1x, 5x, 10x dilutions Extract within 24-Hours of sampling.	
Arroyo Simi #	20170109	1-9-17/1030	WS	125 mL Sterile Poly	3	Na2S2O3	10	No	X	Comments Deliver to lab ASAP 8 hr hold time, Need 1x, 5x, 10x dilutions Extract within 24-Hours of sampling.
	Arroyo Simi#		WS	250 mL Poly	1	HNO3	100	No		
			WS	1L Glass Amber	2	None	110	No		
			WS	1L Poly	1	None	165	No		
			WS	1L Glass Amber	2	HCl	275	No		
			WS	1L Glass Amber	2	None	285	No		
			WS	1L Glass Amber	2	None	110	No		
			WS	1L Glass Amber	2	HCl	275	No		
			WS	1L Glass Amber	2	None	285	No		



440-172639 Chain of Custody

Relinquished By: <i>Mark Dominick</i>	Date/Time: 1-9-17/1215	Company: <i>WES</i>	Received By: <i>[Signature]</i>	Date/Time: 1-17 1415
Relinquished By: <i>[Signature]</i>	Date/Time: 1-9-17 1400	Company: <i>W</i>	Received By: <i>[Signature]</i>	Date/Time: 1-17 1415
Relinquished By: <i>[Signature]</i>	Date/Time: 1-9-17 1400	Company: <i>W</i>	Received By: <i>[Signature]</i>	Date/Time: 1-17 1415

25/2.0 3.6/3.1 3.4/2.9 2.8/1.9 2.6/2.1 2.0/1.5 2.9/2.3 2.2/1.7
 2.4/1.9
 1.8 7.7



Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Patel, Urvashti	Lab PM: Patel, Urvashti	Carrier Tracking No(s): 440-106322-1	COG No: 440-106322-1
Company: TestAmerica Laboratories, Inc.		Phone: urvashti.patel@testamericainc.com	E-Mail: urvashti.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Address: 880 Riverside Parkway, West Sacramento, CA 95605		Due Date Requested: 1/19/2017	Analysis Requested:	Job #: 440-172639-1	Preservation Codes:
City: West Sacramento		TAT Requested (days):	Field Filtered Sample (Yes or No):	Accreditations Required (See note):	M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA L - EDA Z - other (specify)
Phone: 916-373-5600(Tel) 916-372-1059(Fax)		PO #:	Perform MS/MSD (Yes or No):	Other:	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Z - other (specify)
Email:		WO #:	1618/1613B_Box_Sep_P Standard List w/ Totals	Total Number of Containers:	See OAS, Boiling_w/lu to zero; Use Boiling glassware.
Project Name: Annual Arroyo Simi-frontier Park		Project #: 44009879	Matrix (In-water, Swabbed, On-surface, A-AU)	Special Instructions/Note:	
Site:		SSOW#:	Sample Type (C=Comp, G=grab)		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Date	Sample Time
Arroyo Simi_20170108_Grab (440-172639-1)		1/9/17	10:30 Pacific	1/9/17	10:30 Pacific
* Also received 2 containers for Sample #2 (MR 1/17/17) (MR 1/17/17)					
<p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p>					
<p>Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Relinquished by: <i>Vu B...</i> Date/Time: 1/10/17 17:00 Company: <i>IAI</i> Relinquished by: <i>Tony G. Turpin</i> Date/Time: 1/11/17 11:15 Company: <i>TAS</i> Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals intact: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Custody Seal No: _____ Cooler Temperature(s) °C and Other Remarks: <i>6.0°C ice</i></p>					



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172639-1

Login Number: 172639

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-172639-1

Login Number: 172639

List Number: 2

Creator: Edman, Connor M

List Source: TestAmerica Sacramento

List Creation: 01/12/17 03:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
 Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDD (25-164)	TCDF (22-152)	TCDF (24-169)	PeCDD (21-227)	PeCDD (25-181)	PeCDF1 (21-192)	PeCDF1 (24-185)
440-172639-1	Arroyo Simi_20170109_Grab		66		66		77		73
440-172639-1 - RA	Arroyo Simi_20170109_Grab				69				
MB 320-146219/1-A	Method Blank		53		55		60		58
MB 320-146219/1-A - RA	Method Blank				57				

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PeCDF2 (13-328)	PeCDF2 (21-178)	HxCDD1 (21-193)	HxCDD1 (32-141)	HxCDD2 (25-163)	HxCDD2 (28-130)	HxCDF1 (19-202)	HxCDF1 (26-152)
440-172639-1	Arroyo Simi_20170109_Grab		82		82		79		82
440-172639-1 - RA	Arroyo Simi_20170109_Grab								
MB 320-146219/1-A	Method Blank		64		65		65		65
MB 320-146219/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF2 (26-123)	HxCDF4 (17-205)	HxCDF4 (29-147)	HxCDF3 (22-176)	HxCDF3 (28-136)	HpCDD (23-140)	HpCDD (26-166)
440-172639-1	Arroyo Simi_20170109_Grab		79		73		81	78	
440-172639-1 - RA	Arroyo Simi_20170109_Grab								
MB 320-146219/1-A	Method Blank		64		54		64	58	
MB 320-146219/1-A - RA	Method Blank								

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HpCDF1 (21-158)	HpCDF1 (28-143)	HpCDF2 (20-186)	HpCDF2 (26-138)	OCDD (13-199)	OCDD (17-157)
440-172639-1	Arroyo Simi_20170109_Grab		86		83		76
440-172639-1 - RA	Arroyo Simi_20170109_Grab						
MB 320-146219/1-A	Method Blank		65		58		54
MB 320-146219/1-A - RA	Method Blank						

Surrogate Legend

- TCDD = 13C-2,3,7,8-TCDD
- TCDF = 13C-2,3,7,8-TCDF
- PeCDD = 13C-1,2,3,7,8-PeCDD
- PeCDF1 = 13C-1,2,3,7,8-PeCDF
- PeCDF2 = 13C-2,3,4,7,8-PeCDF
- HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
- HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
- HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
- HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
- HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
- HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
- HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
- HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
- HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
- OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-frontier Park

TestAmerica Job ID: 440-172639-1

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCDD (20-175)	TCDF (22-152)	PeCDD (21-227)	PeCDF1 (21-192)	PeCDF2 (13-328)	HxCDD1 (21-193)	HxCDD2 (25-163)	HxCDF1 (19-202)
LCS 320-146219/2-A	Lab Control Sample	57	59	66	64	71	65	66	69
LCSD 320-146219/3-A	Lab Control Sample Dup	57	59	67	61	73	76	71	74

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HxCDF2 (21-159)	HxCDF4 (17-205)	HxCDF3 (22-176)	HpCDD (26-166)	HpCDF1 (21-158)	HpCDF2 (20-186)	OCDD (13-199)
LCS 320-146219/2-A	Lab Control Sample	66	56	67	55	61	57	52
LCSD 320-146219/3-A	Lab Control Sample Dup	69	63	71	69	73	69	62

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
 TCDF = 13C-2,3,7,8-TCDF
 PeCDD = 13C-1,2,3,7,8-PeCDD
 PeCDF1 = 13C-1,2,3,7,8-PeCDF
 PeCDF2 = 13C-2,3,4,7,8-PeCDF
 HxCDD1 = 13C-1,2,3,4,7,8-HxCDD
 HxCDD2 = 13C-1,2,3,6,7,8-HxCDD
 HxCDF1 = 13C-1,2,3,4,7,8-HxCDF
 HxCDF2 = 13C-1,2,3,6,7,8-HxCDF
 HxCDF4 = 13C-1,2,3,7,8,9-HxCDF
 HxCDF3 = 13C-2,3,4,6,7,8-HxCDF
 HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
 HpCDF1 = 13C-1,2,3,4,6,7,8-HpCDF
 HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF
 OCDD = 13C-OCDD

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-173614-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 16, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-173614-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170116	440-173614-1	N/A	Water	1/16/2017 8:15:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-173614-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- The sampler's name was missing from the COC.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F— *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 16, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Method for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The requested *E. coli* was prepared 13 minutes past the 8 hour holding time requirement. The sample result was qualified as estimated (J).

III.2. CALIBRATION

Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

III.3.5. SAMPLE RESULT VERIFICATION

The *E. coli* sample result was verified against the raw data. No transcription errors or calculation errors were noted.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401736141

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170116 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/16/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-173614-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	430	1.8	1.8	mpn/100	BU	J	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-173614-1

Client Project/Site: Annual Arroyo Simi -Frontier Park

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/5/2017 10:01:11 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/5/2017 10:01:11 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-173614-1	ArroyoSimi-20170116	Water	01/16/17 08:15	01/16/17 16:03

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Job ID: 440-173614-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-173614-1

Comments

Client was informed of past hold bacti analysis via email.
Revised to remove underscore and add hypen.

Receipt

The sample was received on 1/16/2017 4:03 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

Receipt Exceptions

The following sample was received outside of holding time: ArroyoSimi_20170116 (440-173614-1). The courier relinquished the COC at 1603, samples were taken at 0815 this morning. According to the Micro analyst they did not get the samples til 1618, 3 minutes past Hold Time.

Biology

Method(s) SM 9221F: The following sample(s) was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: ArroyoSimi_20170116 (440-173614-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Client Sample ID: ArroyoSimi-20170116

Lab Sample ID: 440-173614-1

Date Collected: 01/16/17 08:15

Matrix: Water

Date Received: 01/16/17 16:03

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	430	BU	1.8	1.8	MPN/100mL			01/16/17 16:28	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Client Sample ID: ArroyoSimi-20170116

Lab Sample ID: 440-173614-1

Date Collected: 01/16/17 08:15

Matrix: Water

Date Received: 01/16/17 16:03

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	383467	(Start) 01/16/17 16:28 (End) 01/19/17 16:51	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Biology

Analysis Batch: 383467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-173614-1	ArroyoSimi-20170116	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Qualifiers

Biology

Qualifier	Qualifier Description
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-173614-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-173614-1

Login Number: 173614

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-173728-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 16, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-173728-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170117	440-173728-1	N/A	Water	1/17/2017 8:15:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-173728-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 16 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Method for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The requested *E. coli* was prepared within 8 hours of collection.

III.2. CALIBRATION

Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

III.3.5. SAMPLE RESULT VERIFICATION

The *E. coli* sample result was verified against the raw data. No transcription errors or calculation errors were noted.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401737281

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170117 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/17/2017 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-173728-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	330	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-173728-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/24/2017 9:19:39 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/24/2017 9:19:39 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-173728-1	ArroyoSimi-20170117	Water	01/17/17 08:15	01/17/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Job ID: 440-173728-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-173728-1

Comments

No additional comments.

Receipt

The sample was received on 1/17/2017 1:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.7° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Client Sample ID: ArroyoSimi-20170117

Lab Sample ID: 440-173728-1

Date Collected: 01/17/17 08:15

Matrix: Water

Date Received: 01/17/17 13:30

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	330		1.8	1.8	MPN/100mL			01/17/17 14:00	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Client Sample ID: ArroyoSimi-20170117

Lab Sample ID: 440-173728-1

Date Collected: 01/17/17 08:15

Matrix: Water

Date Received: 01/17/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	383528	(Start) 01/17/17 14:00 (End) 01/20/17 15:15	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Biology

Analysis Batch: 383528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-173728-1	ArroyoSimi-20170117	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-173728-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-173728-1

Login Number: 173728

List Number: 1

Creator: Avila, Stephanie 1

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-173746-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 16, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-173746-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170118	440-173746-1	N/A	Water	1/18/2017 8:10:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-173746-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- The COC was received without the name of the field sampler. A revised COC with the sampler's name was included in the package.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 16, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Method for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for method 9221F, was met.

III.2. CALIBRATION

Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401737461

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170118 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/18/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-173746-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	370	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-173746-1

Client Project/Site: Arroyo Simi Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/29/2017 10:02:22 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

TotalAccess

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Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/29/2017 10:02:22 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-173746-1	ArroyoSimi-201701118	Water	01/18/17 08:10	01/18/17 14:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Job ID: 440-173746-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-173746-1

Comments

No additional comments.

Receipt

The sample was received on 1/18/2017 2:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Client Sample ID: ArroyoSimi-201701118

Lab Sample ID: 440-173746-1

Date Collected: 01/18/17 08:10

Matrix: Water

Date Received: 01/18/17 14:30

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	370		1.8	1.8	MPN/100mL			01/18/17 15:01	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Client Sample ID: ArroyoSimi-201701118

Lab Sample ID: 440-173746-1

Date Collected: 01/18/17 08:10

Matrix: Water

Date Received: 01/18/17 14:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384193	(Start) 01/18/17 15:01 (End) 01/21/17 16:35	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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- 10
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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Biology

Analysis Batch: 384193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-173746-1	ArroyoSimi-201701118	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Arroyo Simi Frontier Park

TestAmerica Job ID: 440-173746-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

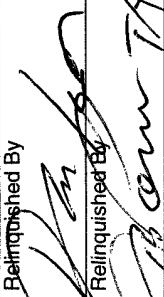
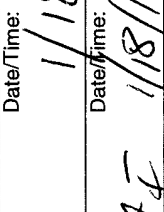
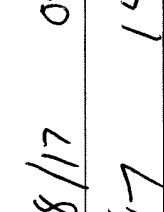
Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America Version 7/19/2010

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		ANALYSIS REQUIRED		Comments	
Test America Contact: Unvashi Patel Project Manager: Nancy Gardiner		Phone Number: 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		FT coll (SM9221)		Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Sample Description: Arroyo Simi	Sample Matrix: W	Container Type: 125mL Sterile Poly	# of Cont.: 3	Sample I.D.: ArroyoSimi-20170118	Sampling Date/Time: 01/18/2017 08:10	Preservative: Na2S2O3	Bottle #: 10
Relinquished By: 		Date/Time: 1/18/17 0810		Relinquished By: [Signature]		Date/Time: 1/18/17 1105	
Relinquished By: 		Date/Time: 1/18/17 1430		Relinquished By: [Signature]		Date/Time: 1/18/17 1413	
Relinquished By: 		Date/Time: 1/18/17 1430		Relinquished By: [Signature]		Date/Time: 1/18/17 1413	

3.2°/2.9° # 77



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-173746-1

Login Number: 173746

List Number: 1

Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174343-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 16, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174343-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170119	440-174343-1	N/A	Water	1/19/2017 7:10:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-174343-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC, except as noted below.
- According to the laboratory's sample receipt checklist, custody seals were intact.

MECX noted anomalies regarding sample management identified below.

- The sampler's name was missing from the COC.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 16, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Method for the Examination of Water and Wastewater 9221F* and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The requested *E. coli* was prepared 2 minutes past the 8 hour holding time requirement for two of the three dilutions. The sample result was qualified as estimated (J).

III.2. CALIBRATION

Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample from this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on the sample in this SDG.

III.3.5. SAMPLE RESULT VERIFICATION

Calculations were verified and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.4.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.4.2. FIELD DUPLICATES

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401743431

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170119 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/19/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174343-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	6700	1.8	1.8	mpn/100		J	H

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174343-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/26/2017 10:37:44 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?

? **Ask
The
Expert**

Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/26/2017 10:37:44 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174343-1	ArroyoSimi-20170119	Water	01/19/17 07:10	01/19/17 14:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Job ID: 440-174343-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174343-1

Comments

No additional comments.

Receipt

The sample was received on 1/19/2017 2:45 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Client Sample ID: ArroyoSimi-20170119

Lab Sample ID: 440-174343-1

Date Collected: 01/19/17 07:10

Matrix: Water

Date Received: 01/19/17 14:45

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	6700		1.8	1.8	MPN/100mL			01/19/17 15:10	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Client Sample ID: ArroyoSimi-20170119

Lab Sample ID: 440-174343-1

Date Collected: 01/19/17 07:10

Matrix: Water

Date Received: 01/19/17 14:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384197	(Start) 01/19/17 15:10 (End) 01/22/17 15:20	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Biology

Analysis Batch: 384197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174343-1	ArroyoSimi-20170119	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174343-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.


Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America Version 7/19/2010

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		ANALYSIS REQUIRED		Comments	
Test America Contact: Urvashi Patel Project Manager: Nancy Gardiner Sampler:		Phone Number: 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		F. coli (SM9221)		Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Sample Description	Sample Matrix	Container Type	# of Cont.	Sample I.D.	Sampling Date/Time	Preservative	Bottle #
Arroyo Simi	W	125mL Sterile Poly	3	Arroyo Simi-20170119	01/19/2017/0710	Na2S2O3	10
 440-174343 Chain of Custody							
Relinquished By	Date/Time:	Relinquished By	Date/Time:	Relinquished By	Date/Time:	Relinquished By	Date/Time:
<i>[Signature]</i>	1/19/17 0710	<i>[Signature]</i>	1/19/17 1115	<i>[Signature]</i>	1/19/17 1115	<i>[Signature]</i>	1/19/17 1115
Relinquished By	Date/Time:	Relinquished By	Date/Time:	Relinquished By	Date/Time:	Relinquished By	Date/Time:
<i>[Signature]</i>	1/19/17 1145	<i>[Signature]</i>	1/19/17 1445	<i>[Signature]</i>	1/19/17 1445	<i>[Signature]</i>	1/19/17 1445
Relinquished By	Date/Time:	Relinquished By	Date/Time:	Relinquished By	Date/Time:	Relinquished By	Date/Time:

UTC

0.8/0.5
1.272



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174343-1

Login Number: 174343

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174345-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174345-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170120	440-174345-1	N/A	Water	1/20/17 7:10 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174345-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the coolers at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for Method 9221F, was met.

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743451

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170120 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/20/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174345-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	1700	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174345-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/26/2017 10:50:06 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/26/2017 10:50:06 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174345-1	ArroyoSimi-20170120	Water	01/20/17 07:10	01/20/17 13:40

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Job ID: 440-174345-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174345-1

Comments

No additional comments.

Receipt

The sample was received on 1/20/2017 1:40 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Client Sample ID: ArroyoSimi-20170120

Lab Sample ID: 440-174345-1

Date Collected: 01/20/17 07:10

Matrix: Water

Date Received: 01/20/17 13:40

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	1700		1.8	1.8	MPN/100mL			01/20/17 14:26	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Client Sample ID: ArroyoSimi-20170120

Lab Sample ID: 440-174345-1

Date Collected: 01/20/17 07:10

Matrix: Water

Date Received: 01/20/17 13:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384325	(Start) 01/20/17 14:26 (End) 01/23/17 15:17	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Biology

Analysis Batch: 384325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174345-1	ArroyoSimi-20170120	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174345-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174345-1

Login Number: 174345

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174341-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174341-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170121	440-174341-1	N/A	Water	1/21/17 8:10 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174341-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample container intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for Method 9221F, was met.

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample results reported on the sample results summary were verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743411

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170121 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/21/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174341-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	3400	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174341-1

Client Project/Site: Annual Arroyo Simi -Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/26/2017 10:34:31 PM

Urvashi Patel, Manager of Project Management

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/26/2017 10:34:31 PM

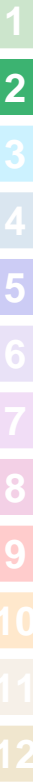


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Chain of Custody	12
Receipt Checklists	13

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174341-1	ArroyoSimi-20170121	Water	01/21/17 08:10	01/21/17 12:10

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Job ID: 440-174341-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174341-1

Comments

No additional comments.

Receipt

The sample was received on 1/21/2017 12:10 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Client Sample ID: ArroyoSimi-20170121

Lab Sample ID: 440-174341-1

Date Collected: 01/21/17 08:10

Matrix: Water

Date Received: 01/21/17 12:10

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	3400		1.8	1.8	MPN/100mL			01/21/17 12:26	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Client Sample ID: ArroyoSimi-20170121

Lab Sample ID: 440-174341-1

Date Collected: 01/21/17 08:10

Matrix: Water

Date Received: 01/21/17 12:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384345	(Start) 01/21/17 12:26 (End) 01/24/17 15:26	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Biology

Analysis Batch: 384345

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174341-1	ArroyoSimi-20170121	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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%R	Percent Recovery
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CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi -Frontier Park

TestAmerica Job ID: 440-174341-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

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Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860 Test America Contact: Urvasi Patel		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park <small>TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-16-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.</small>		Phone Number: 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		ANALYSIS REQUIRED		Comments Store all samples for 6 months	
Sample Description: Arroyo Simi	Sample Matrix: W	Container Type: 125mL Sterile Poly	# of Cont.: 3	Sample I.D.: ArroyoSimi-20170121/0810	Sampling Date/Time: 01/21/2017	Preservative: Na2S2O3	Bottle #: 10	Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Relinquished By: [Signature]		Date/Time: 1/21/17 10:00		Relinquished By: [Signature]		Date/Time: 1/21/17 12:10		Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ X _____ 72 Hours _____ Normal _____ Sample integrity: (check) Intact _____ On Ice: _____ Store samples for 6 months. Data Requirements: (check) No Level IV _____ All Level IV _____ X _____	
Relinquished By: [Signature]		Date/Time: 1/21/17 12:10		Relinquished By: [Signature]		Date/Time: 1/21/17 12:10		440-174341 Chain of Custody	

4.3/4.6 # 506



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174341-1

Login Number: 174341

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174722-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174722-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170122	440-174722-1	N/A	Water	1/22/17 7:03 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174722-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The sample was analyzed 4 minutes past the analytical holding time requirement of 8 hours for Method 9221F; therefore, the sample result was qualified as estimated (J).

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401747221

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170122 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/22/2017 7:03:00 AM **Validation Level:** 8

Lab Sample Name: 440-174722-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	1900	1.8	1.8	mpn/100	BU	J	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174722-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

Revision: 2

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/5/2017 10:10:17 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/5/2017 10:10:17 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174722-1	ArroyoSimi-20170122	Water	01/22/17 07:03	01/22/17 14:04

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Job ID: 440-174722-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174722-1

Comments

Courier was scheduled for 12pm but sample was taken at 7am so there wasn't enough time left to meet hold time. Client was informed past hold analysis.

Client requested sample ID change. add o after y.

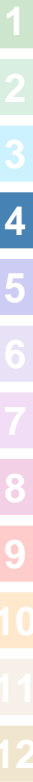
Receipt

The sample was received on 1/22/2017 2:04 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9° C.

Biology

Method(s) SM 9221F: The following sample(s) was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: ArroySimi-20170122 (440-174722-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Client Sample ID: ArroyoSimi-20170122

Lab Sample ID: 440-174722-1

Date Collected: 01/22/17 07:03

Matrix: Water

Date Received: 01/22/17 14:04

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	1900	BU	1.8	1.8	MPN/100mL			01/22/17 15:07	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Client Sample ID: ArroyoSimi-20170122

Lab Sample ID: 440-174722-1

Date Collected: 01/22/17 07:03

Matrix: Water

Date Received: 01/22/17 14:04

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384605	(Start) 01/22/17 15:07 (End) 01/25/17 16:15	ZEM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Biology

Analysis Batch: 384605

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174722-1	ArroyoSimi-20170122	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Qualifiers

Biology

Qualifier	Qualifier Description
BU	Analyzed out of holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174722-1

Laboratory: TestAmerica Irvine

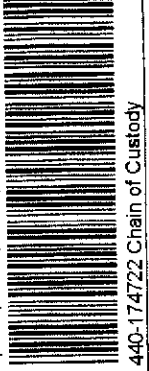
All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		Comments: Store all samples for 6 months	
Test America Contact: Urvashi Patel Phone Number: 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.			
Project Manager: Katherine Miller		Sample Description: Arroyo Simi		Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Sampler:		Sample Matrix: W		Bottle #: 10	
Container Type: 125mL Sterile Pety		# of Cont.: 3		Preservative: Na2S2O3	
Sample I.D.: Arroyo Simi-20170122/1730		Sampling Date/Time: 1/22/2017		Date/Time:	
Relinquished By: [Signature]		Date/Time: 1/22/17 0705		Relinquished By: [Signature]	
Relinquished By: [Signature]		Date/Time: 1/22/17 14:04		Relinquished By: [Signature]	
Relinquished By: [Signature]		Date/Time:		Relinquished By:	
Turn around Time: (check) 24 Hours ___ 48 Hours ___ 72 Hours ___		Sample Integrity: (check) Intact ___ On Ice: ___		Store samples for 6 months. Data Requirements: (check) No Level IV ___ All Level IV ___ X ___	



0.4/10.0 x 1000



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174722-1

Login Number: 174722

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174340-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174340-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170123	440-174340-1	N/A	Water	1/23/17 7:10 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174340-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for Method 9221F, was met.

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401743401

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170123 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/23/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174340-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	2800	1.8	1.8	mpn/100			

TestAmerica

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174340-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/29/2017 10:21:24 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



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www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/29/2017 10:21:24 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174340-1	ArroyoSimi-20170123	Water	01/23/17 07:10	01/23/17 11:45

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Job ID: 440-174340-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174340-1

Comments

No additional comments.

Receipt

The sample was received on 1/23/2017 11:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Client Sample ID: ArroyoSimi-20170123

Lab Sample ID: 440-174340-1

Date Collected: 01/23/17 07:10

Matrix: Water

Date Received: 01/23/17 11:45

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	2800		1.8	1.8	MPN/100mL			01/23/17 14:57	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Client Sample ID: ArroyoSimi-20170123

Lab Sample ID: 440-174340-1

Date Collected: 01/23/17 07:10

Matrix: Water

Date Received: 01/23/17 11:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384613	(Start) 01/23/17 14:57 (End) 01/26/17 14:36	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Biology

Analysis Batch: 384613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174340-1	ArroyoSimi-20170123	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174340-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174340-1

Login Number: 174340

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174718-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174718-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170124	440-174718-1	N/A	Water	1/24/2017 7:10:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174718-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for Method 9221F, was met.

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401747181

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170124 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/24/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174718-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	510	1.8	1.8	mpn/100			

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174718-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

1/31/2017 6:28:17 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
1/31/2017 6:28:17 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174718-1	ArroyoSimi-20170124	Water	01/24/17 07:10	01/24/17 12:15

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Job ID: 440-174718-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174718-1

Comments

No additional comments.

Receipt

The sample was received on 1/24/2017 12:15 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Client Sample ID: ArroyoSimi-20170124

Lab Sample ID: 440-174718-1

Date Collected: 01/24/17 07:10

Matrix: Water

Date Received: 01/24/17 12:15

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	510		1.8	1.8	MPN/100mL			01/24/17 13:32	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Client Sample ID: ArroyoSimi-20170124

Lab Sample ID: 440-174718-1

Date Collected: 01/24/17 07:10

Matrix: Water

Date Received: 01/24/17 12:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	384896	(Start) 01/24/17 13:32 (End) 01/27/17 11:42	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Biology

Analysis Batch: 384896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174718-1	ArroyoSimi-20170124	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174718-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174718-1

Login Number: 174718

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174727-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 23, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174727-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170125	440-174727-1	N/A	Water	1/25/2017 7:10:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174727-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 23, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The sample was analyzed approximately 5 hours past the analytical holding time requirement of 8 hours for Method 9221F; therefore, the sample result was qualified as estimated (J).

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.1. QUALITY CONTROL SAMPLES

III.1.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.1.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with the positive detects for the target bacteria.

III.1.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.1.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.2. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.3. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.3.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.3.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401747271

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170125 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/25/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174727-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	500	1.8	1.8	mpn/100	BUBV	J	H

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174727-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

Revision: 1

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

4/5/2017 10:29:01 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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results through

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Visit us at:

www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
4/5/2017 10:29:01 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174727-1	ArroyoSimi-20170125	Water	01/25/17 07:10	01/25/17 19:35

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Job ID: 440-174727-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174727-1

Comments

Courier didn't come straight back with bacti sample. Client was informed past hold analysis.
Client requested sample ID change. add o after y.

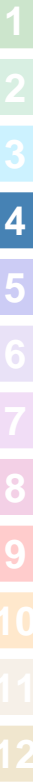
Receipt

The sample was received on 1/25/2017 7:35 PM; the sample arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 1.8° C.

Biology

Method(s) SM 9221F: The following sample was received outside of holding time: ArroyoSimi-20170125 (440-174727-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Client Sample ID: ArroyoSimi-20170125

Lab Sample ID: 440-174727-1

Date Collected: 01/25/17 07:10

Matrix: Water

Date Received: 01/25/17 19:35

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	500	BU BV	1.8	1.8	MPN/100mL			01/25/17 19:58	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Client Sample ID: ArroyoSimi-20170125

Lab Sample ID: 440-174727-1

Date Collected: 01/25/17 07:10

Matrix: Water

Date Received: 01/25/17 19:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	385204	(Start) 01/25/17 19:58 (End) 01/28/17 16:09	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Biology

Analysis Batch: 385204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174727-1	ArroyoSimi-20170125	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Qualifiers

Biology

Qualifier	Qualifier Description
BU	Analyzed out of holding time
BV	Sample received after holding time expired

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174727-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174727-1

Login Number: 174727

List Number: 1

Creator: Saraubon, Phakchaya

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-174853-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 22, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-174853-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170126	440-174853-1	N/A	Water	1/26/2017 7:10:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-174853-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 22, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for Method 9221F, was met.

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401748531

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170126 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 1/26/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-174853-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	430	1.8	1.8	mpn/100			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-174853-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/2/2017 9:51:29 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/2/2017 9:51:29 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-174853-1	ArroyoSimi-20170126	Water	01/26/17 07:10	01/26/17 13:00

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Job ID: 440-174853-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-174853-1

Comments

No additional comments.

Receipt

The sample was received on 1/26/2017 1:00 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.4° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Client Sample ID: ArroyoSimi-20170126

Lab Sample ID: 440-174853-1

Date Collected: 01/26/17 07:10

Matrix: Water

Date Received: 01/26/17 13:00

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	430		1.8	1.8	MPN/100mL			01/26/17 14:21	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Client Sample ID: ArroyoSimi-20170126

Lab Sample ID: 440-174853-1

Date Collected: 01/26/17 07:10

Matrix: Water

Date Received: 01/26/17 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	385208	(Start) 01/26/17 14:21 (End) 01/29/17 15:21	KRW	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Biology

Analysis Batch: 385208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-174853-1	ArroyoSimi-20170126	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-174853-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.



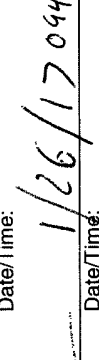
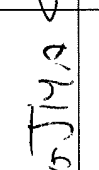
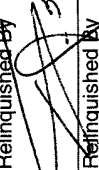
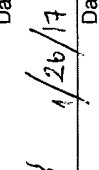
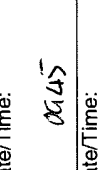
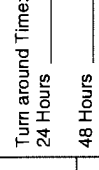
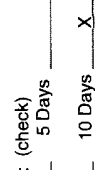


Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

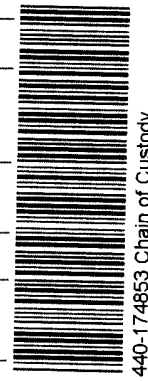
* Certification renewal pending - certification considered valid.

TestAmerica Irvine

CHAIN OF CUSTODY FORM

Test America Version 7/19/2010

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		ANALYSIS REQUIRED		Comments	
Test America Contact: Urvasi Patel Project Manager: Nancy Gardiner		Phone Number: 619.285.7132, 858.337.4061 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		F1 coli (SM9221)		Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Sampler:		Sample I.D. Arroyo Simi-20170126		Bottle # 10		Store all samples on COC for 6 months	
Container Type 125mL Sterile Poly		# of Cont. 3		Preservative Na2S2O3		Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ X _____ 72 Hours _____ Normal _____	
Sample Matrix W		Sampling Date/Time 01/26/2017 12:17 PM		Relinquished By 		Sample Integrity: (check) Intact _____ On Ice: _____	
Relinquished By 		Date/Time: 1/26/17 0945 JMA		Relinquished By 		Data Requirements: (check) No Level IV _____ All Level IV _____ NPDES Level IV _____ X _____	
Relinquished By 		Date/Time: 1/26/17 1300		Relinquished By 		NPDES Level IV _____ X _____	
Relinquished By 		Date/Time: 01/26/17 1300		Relinquished By 		NPDES Level IV _____ X _____	
Relinquished By 		Date/Time: 01/26/17 1300		Relinquished By 		NPDES Level IV _____ X _____	
Relinquished By 		Date/Time: 01/26/17 1300		Relinquished By 		NPDES Level IV _____ X _____	



Temp 4.6 / 4.4 1286



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-174853-1

Login Number: 174853

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175475-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 24, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-175475-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170202	440-175475-1	N/A	Water	2/2/2017 7:10:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-175475-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the laboratory's sample receipt checklist, custody seals were intact.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. METHOD 9221F — *E. COLI*

Michael Cherny of MEC^X reviewed the SDG on March 24, 2017

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Method for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours from collection, was met for all three dilutions.

III.2. CALIBRATION

Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed for the biological method with the positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed on a sample in this SDG.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and *E. coli* sample results reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401754751

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170202 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/2/2017 7:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-175475-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	200	1.8	1.8	mpn/100			

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-175475-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/8/2017 8:59:15 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/8/2017 8:59:15 PM

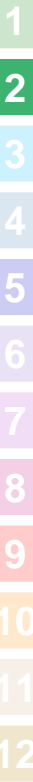


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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-175475-1	ArroyoSimi-20170202	Water	02/02/17 07:10	02/02/17 12:20

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Job ID: 440-175475-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-175475-1

Comments

No additional comments.

Receipt

The sample was received on 2/2/2017 12:20 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.6° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Client Sample ID: ArroyoSimi-20170202

Lab Sample ID: 440-175475-1

Date Collected: 02/02/17 07:10

Matrix: Water

Date Received: 02/02/17 12:20

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	200		1.8	1.8	MPN/100mL			02/02/17 13:14	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Client Sample ID: ArroyoSimi-20170202

Lab Sample ID: 440-175475-1

Date Collected: 02/02/17 07:10

Matrix: Water

Date Received: 02/02/17 12:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	386994	(Start) 02/02/17 13:14 (End) 02/05/17 13:50	ST	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Biology

Analysis Batch: 386994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-175475-1	ArroyoSimi-20170202	Total/NA	Water	SM 9221F	

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-175475-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-175475-1

Login Number: 175475

List Source: TestAmerica Irvine

List Number: 1

Creator: Saraubon, Phakchaya

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-176127-1

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

March 27, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

www.mecx.net





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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference



I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^x Project No.: 1272.003H.01

Sample Delivery Group: 440-176127-1

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
ArroyoSimi-20170208	440-176127-1	N/A	Water	2/8/2017 7:05:00 AM	SM9221F



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chains-of-custody (COCs) provided by the laboratory for sample delivery group (SDG) 440-176127-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were intact on the cooler at TA-Irvine.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



III. METHOD 9221F — *E. COLI*

Marcia Hilchey of MEC^X reviewed the SDG on March 27, 2017

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the MEC^X *Data Validation Procedure for General Minerals (DVP-6, Rev. 1)*, *Standard Methods for the Examination of Water and Wastewater 9221F*, and the *National Functional Guidelines for Inorganic Superfund Data Review (2014)*.

III.1. HOLDING TIMES

The analytical holding time, 8 hours for Method 9221F, was met.

III.2. CALIBRATION

Calibration criteria were met. Biological controls were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

The method blank is not applicable to the biological method. The negative control sample was acceptable.

III.3.2. LABORATORY CONTROL SAMPLES

The presumptive test was analyzed with positive detects for the target bacteria.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analysis is not applicable to this method.

III.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the sample result reported on the sample results summary was verified against the raw data. No transcription errors or calculation errors were noted.

III.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

III.5.1. FIELD BLANKS AND EQUIPMENT BLANKS

Field blank or equipment blank samples were not identified for this SDG.

III.5.2. FIELD DUPLICATES

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4401761271

Analysis Method *SM9221F*

Sample Name ArroyoSimi-20170208 **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 7:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176127-1

Analyte	Fraction	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	5100	1.8	1.8	mpn/100			

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-176127-1

Client Project/Site: Annual Arroyo Simi-Frontier Park

For:

Haley & Aldrich, Inc.

400 E Van Buren St.

Suite 545

Phoenix, Arizona 85004

Attn: Katherine Miller



Authorized for release by:

2/22/2017 8:38:49 PM

Urvashi Patel, Manager of Project Management

(949)261-1022

urvashi.patel@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.



Urvashi Patel
Manager of Project Management
2/22/2017 8:38:49 PM



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Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-176127-1	ArroyoSimi-20170208	Water	02/08/17 07:05	02/08/17 13:30

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Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Job ID: 440-176127-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-176127-1

Comments

No additional comments.

Receipt

The sample was received on 2/8/2017 1:30 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

Biology

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Client Sample ID: ArroyoSimi-20170208

Lab Sample ID: 440-176127-1

Date Collected: 02/08/17 07:05

Matrix: Water

Date Received: 02/08/17 13:30

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	5100		1.8	1.8	MPN/100mL			02/08/17 13:57	1

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Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Method	Method Description	Protocol	Laboratory
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

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Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Client Sample ID: ArroyoSimi-20170208

Lab Sample ID: 440-176127-1

Date Collected: 02/08/17 07:05

Matrix: Water

Date Received: 02/08/17 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	388965	(Start) 02/08/17 13:57 (End) 02/11/17 13:32	ST	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Biology

Analysis Batch: 388965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-176127-1	ArroyoSimi-20170208	Total/NA	Water	SM 9221F	

1

2

3

4

5

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7

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10

11

12

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-176127-1

Laboratory: TestAmerica Irvine


All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-17
Arizona	State Program	9	AZ0671	10-14-17
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 16-001r	01-23-17 *
Hawaii	State Program	9	N/A	01-29-17 *
Kansas	NELAP Secondary AB	7	E-10420	07-31-17
Nevada	State Program	9	CA015312016-2	07-31-17
New Mexico	State Program	6	N/A	01-29-17 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-17 *
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-17

* Certification renewal pending - certification considered valid.

TestAmerica Irvine

440-176127

Client Name/Address: Haley & Aldrich, Inc. 9040 Friars Road Suite 220 San Diego, CA 92108-5860		Project: Boeing-SSFL NPDES Annual Arroyo Simi-Frontier Park		Phone Number: 520.289.8606, 520.904.6944 (cell) Field Manager: Mark Dominick 818.350.7312, 818.599.0702 (cell)		Comments: Deliver to lab ASAP 8 hr hold time, Need 1x, 10x, 100x dilutions	
Test America Contact: Urvashi Patel Project Manager: Katherine Miller		Sample Matrix: W		Sample I.D.: Arroyo Simi-20170208		Container Type: 125mL Sterile Poly	
Sampler: Dan Smith		# of Cont.: 3		Sampling Date/Time: 02/08/2017 10:70		Preservative: Na2S2O3	
		Bottle #: 10		Chain of Custody:		ANALYSIS REQUIRED	
							
				440-176127 Chain of Custody			
Relinquished By: <i>[Signature]</i>		Date/Time: 2/8/17 10:30 AM		Received By: <i>[Signature]</i>		Date/Time: 2/8/17 10:30	
Relinquished By: <i>[Signature]</i>		Date/Time: 2-8-17 1330 TA		Received By: <i>[Signature]</i>		Date/Time: 2/8/17 1330	
Relinquished By: <i>[Signature]</i>		Date/Time:		Received By: <i>[Signature]</i>		Date/Time:	
				Turn around Time: (check) 24 Hours _____ 5 Days _____ 48 Hours _____ 10 Days _____ X 72 Hours _____ Normal _____			
				Sample Integrity: (check) Intact _____ On Ice: _____			
				Data Requirements: (check) No Level IV _____ All Level IV _____			
				NPDES Level IV _____ X			

1-0/1-8 12.66



Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-176127-1

Login Number: 176127

List Number: 1

Creator: Saraubon, Phakchaya

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-175633-2, 440-175636-2, 440-175978-2, 440-175985-2, 440-176654-2,
440-176655-2, 440-176656-2, 440-177392-2, 440-177393-2, 440-177394-2,
440-177395-2, 440-177396-2, 440-177397-2, 440-177398-2, 440-177399-2, 440-178167-2,
440-178168-2, 440-178169-2

Prepared for

Haley & Aldrich, Inc.
600 South Meyer Avenue, Suite 100
Tucson, Arizona 85701

April 10, 2017

MEC^x, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLES

- 1 – Sample Identification
- 2 – Data Qualifier Reference
- 3 - Reason Code Reference

**I. INTRODUCTION****Task Order Title:** Boeing SSFL NPDES**Contract:** 40458-078 and 40458-083**MECX Project No.:** 1272.003H.01**Sample Delivery Group:** 440-175633-2, 440-175636-2, 440-175978-2, 440-175985-2, 440-176654-2, 440-176655-2, 440-176656-2, 440-177392-2, 440-177393-2, 440-177394-2, 440-177395-2, 440-177396-2, 440-177397-2, 440-177398-2, 440-177399-2, 440-178167-2, 440-178168-2, 440-178169-2**Project Manager:** Katherine Miller**Matrix:** Water**QC Level:** IV**No. of Samples:** 18**No. of Reanalyses/Dilutions:** 0**Laboratory:** TestAmerica-Irvine**TABLE 1 - SAMPLE IDENTIFICATION**

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20170204_Comp	440-175633-1	N/A	Water	2/4/17 8:30 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall009_20170205_Comp	440-175636-1	N/A	Water	2/5/17 8:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall018_20170208_Comp	440-175978-3	N/A	Water	2/8/17 9:15 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall001_20170208_Comp	440-175985-2	N/A	Water	2/8/17 8:20 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall018_20170212_Comp	440-176654-1	N/A	Water	2/12/17 7:40 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall002_20170212_Comp	440-176655-1	N/A	Water	2/12/17 8:30 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall009_20170212_Comp	440-176656-1	N/A	Water	2/12/17 9:05 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall004_20170218_Comp	440-177392-1	N/A	Water	2/18/17 12:05 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall009_20170218_Comp	440-177393-1	N/A	Water	2/18/17 9:10 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall002_20170218_Comp	440-177394-1	N/A	Water	2/18/17 12:00 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall018_20170218_Comp	440-177395-1	N/A	Water	2/18/17 12:40 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall001_20170218_Comp	440-177396-1	N/A	Water	2/18/17 10:40 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall008_20170218_Comp	440-177397-1	N/A	Water	2/18/17 9:45 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall006_20170218_Comp	440-177398-1	N/A	Water	2/18/17 11:15 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall011_20170218_Comp	440-177399-1	N/A	Water	2/18/17 12:55 PM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall002_20170227_Comp	440-178167-1	N/A	Water	2/27/17 9:00 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall018_20170227_Comp	440-178168-1	N/A	Water	2/27/17 8:10 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod
Outfall009_20170227_Comp	440-178169-1	N/A	Water	2/27/17 9:50 AM	E900, E901.1, E903.0, E904.0, E905.0, E906.0, HASL-300 U Mod



II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratory for multiple sample delivery groups (SDGs):

- The laboratories received the samples in these SDGs on ice and within the temperature limits of less than 6 degrees Celsius ($^{\circ}\text{C}$) and greater than 0°C .
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issue was noted:

- Some corrections to the original COCs were not initialed or dated.
- The client issued a list of revised sample collection dates and times which affected samples in several SDGs; therefore, the sample collection dates and times on the COCs do not always match the revised collection dates and times used in the laboratory's raw data package and in this report.



TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
§	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

**III. VARIOUS EPA METHODS — RADIONUCLIDES**

Elizabeth Wessling of MEC^x reviewed the SDGs March 28, 2017 to April 10, 2017

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *EPA Methods 900.0, 901.1, 903.0, 904.0, 905.0, 906.0 and HASL-300 U Mod*, and the *National Functional Guidelines for Inorganic Data Review (2014)*.

III.1. HOLDING TIMES:

The tritium samples were analyzed within 180 days of collection. Remaining aliquots were prepared within the five-day analytical holding time for unpreserved samples.

III.2. CALIBRATION:

The gross alpha and radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for gross alpha and radium-226 were qualified as estimated (UJ) in the samples as noted in the table below. The remaining detector efficiencies were greater than 20%. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

Field Sample	Analyte
All samples	Gross alpha analytes
All samples except Outfall002_20170204_Comp Outfall009_20170212_Comp Outfall018_20170218_Comp Outfall006_20170218_Comp	Radium -226

III.3. QUALITY CONTROL SAMPLES**III.3.1. METHOD BLANKS**

Qualifications for activity in method blanks are noted in the table below. When the site sample result was not different from the method blank at the 1% level of confidence, the result was qualified as a nondetect (U) in the site sample. When the site sample result was not different from the method blank at the 5% level of confidence, the result was qualified as estimated (J) in the site sample. (Many sample results were also qualified for detector efficiencies less than 20% (see Calibration section).

Analyte	Sample(s)	Qualification
Gross alpha analytes	Outfall004_20170218_Comp	U
	Outfall009_20170218_Comp	U
	Outfall002_20170218_Comp	J
	Outfall018_20170218_Comp	U
	Outfall001_20170218_Comp	J



	Outfall008_20170218_Comp Outfall006_20170218_Comp Outfall011_20170218_Comp	U J U
Gross beta analytes	Outfall004_20170218_Comp Outfall009_20170218_Comp Outfall018_20170218_Comp Outfall008_20170218_Comp	U J U U
Radium-226	Outfall018_20170218_Comp Outfall001_20170218_Comp Outfall006_20170218_Comp Outfall011_20170218_Comp Outfall002_20170227_Comp	U U U U U
Radium-228	Outfall009_20170218_Comp Outfall002_20170218_Comp Outfall018_20170218_Comp	U U U
Strontium-90	Outfall009_20170218_Comp Outfall011_20170218_Comp	U U
Total Uranium	Outfall002_20170212_Comp Outfall009_20170212_Comp Outfall002_20170218_Comp Outfall018_20170218_Comp Outfall001_20170218_Comp Outfall008_20170218_Comp Outfall006_20170218_Comp Outfall002_20170227_Comp	U U U U U U U U

III.3.2. LABORATORY CONTROL SAMPLES:

The recoveries were within laboratory-established control limits.

III.3.3. LABORATORY DUPLICATES:

Laboratory duplicate analyses, where performed, were within the laboratory control limits and were not evaluated using Paar comparison.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE:

Matrix spike (MS)/MSD analyses, where performed, were within the laboratory control limits.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed on a representative number of samples in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Detects below the reporting limit were qualified as



estimated (J) and coded with DNQ in order to comply with the NPDES permit. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. FIELD BLANKS AND EQUIPMENT RINSATES:

This SDG had no identified field blank or equipment rinsate samples.

III.5.2. FIELD DUPLICATES:

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4401756332

Analysis Method E900

Sample Name Outfall002_20170204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	-0.524	2.53	5.03	5.03	pCi/L	U G	UJ	*III
Gross Beta Analytes	GROSSBETA	4.66	1.48	1.79	1.79	pCi/L	F		

Analysis Method E901.1

Sample Name Outfall002_20170204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	6.01	10.4	17.5	17.5	pCi/L	U	U	
Potassium-40	13966-00-2	52.0	98.4	161	161	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20170204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0630	0.129	0.232	0.232	pCi/L	U	U	

Analysis Method E904.0

Sample Name Outfall002_20170204_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/4/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.00302	0.321	0.574	0.574	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.345	0.293	0.468	0.468	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-118	172	323	323	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall002_20170204_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/4/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-175633-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	2.62	0.516	0.119	0.119	pCi/L			

Validated Sample Result Forms: 4401756362

Analysis Method E900

Sample Name Outfall009_20170205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2017 8:00:00 AM Validation Level: 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.363	0.800	3.00	1.42	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	1.69	0.686	4.00	0.918	pCi/L	F	J	DNQ

Analysis Method E901.1

Sample Name Outfall009_20170205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2017 8:00:00 AM Validation Level: 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-3.61	11.6	20.0	20.0	pCi/L	U	U	
Potassium-40	13966-00-2	-43.0	147	206	206	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2017 8:00:00 AM Validation Level: 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0121	0.146	1.00	0.294	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall009_20170205_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/5/2017 8:00:00 AM Validation Level: 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0143	0.196	1.00	0.350	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.119	0.155	3.00	0.257	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-156	172	500	331	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170205_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/5/2017 8:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-175636-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.0849	0.1007	1.00	0.134	pCi/L	U	U	

Validated Sample Result Forms: 4401759782

Analysis Method E900

Sample Name Outfall018_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.62	1.12	3.00	1.65	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	2.32	0.835	4.00	1.12	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall018_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	0.465	7.17	20.0	13.0	pCi/L	U	U	
Potassium-40	13966-00-2	4.70	118	176	176	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall018_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	-0.0582	0.165	1.00	0.360	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall018_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 9:15:00 AM Validation Level: 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0835	0.233	1.00	0.403	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.372	0.235	3.00	0.472	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-137	179	500	339	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall018_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 9:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-175978-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.0653	0.09403	1.00	0.147	pCi/L	U	U	

Validated Sample Result Forms: 4401759852

Analysis Method E900

Sample Name Outfall001_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.779	0.918	3.00	1.50	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	2.25	0.811	4.00	1.08	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall001_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	1.41	8.93	20.0	15.5	pCi/L	U	U	
Potassium-40	13966-00-2	47.8	88.5	145	145	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall001_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0181	0.150	1.00	0.305	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall001_20170208_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/8/2017 8:20:00 AM Validation Level: 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.205	0.272	1.00	0.452	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.277	0.255	3.00	0.409	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-182	174	500	338	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall001_20170208_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/8/2017 8:20:00 AM **Validation Level:** 8

Lab Sample Name: 440-175985-2

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.0948	0.1078	1.00	0.134	pCi/L	U	U	

Validated Sample Result Forms: 4401766542

Analysis Method E900

Sample Name Outfall018_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 7:40:00 AM Validation Level: 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	-0.588	0.777	3.00	1.79	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	1.64	0.650	4.00	0.865	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall018_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 7:40:00 AM Validation Level: 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	2.41	7.20	20.0	12.8	pCi/L	U	U	
Potassium-40	13966-00-2	8.39	103	191	191	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall018_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 7:40:00 AM Validation Level: 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0613	0.0940	1.00	0.162	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall018_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 7:40:00 AM Validation Level: 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0834	0.281	1.00	0.485	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.0240	0.144	3.00	0.263	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-41.9	161	500	298	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall018_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 7:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-176654-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.0338	0.07454	1.00	0.125	pCi/L	U	U	

Validated Sample Result Forms: 4401766552

Analysis Method E900

Sample Name Outfall002_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.113	1.25	3.00	2.30	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	3.42	0.880	4.00	0.975	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall002_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-1.89	9.30	20.0	13.4	pCi/L	U	U	
Potassium-40	13966-00-2	-40.2	134	184	184	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.00707	0.0817	1.00	0.166	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall002_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 8:30:00 AM Validation Level: 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.0865	0.307	1.00	0.552	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0146	0.174	3.00	0.309	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-98.2	171	500	324	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall002_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 8:30:00 AM **Validation Level:** 8

Lab Sample Name: 440-176655-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.266	0.1601	1.00	0.0981	pCi/L		U	B

Validated Sample Result Forms: 4401766562

Analysis Method E900

Sample Name Outfall009_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 9:05:00 AM Validation Level: 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	-0.244	0.843	3.00	1.69	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	1.80	0.790	4.00	1.12	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall009_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 9:05:00 AM Validation Level: 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	5.35	10.6	20.0	17.9	pCi/L	U	U	
Potassium-40	13966-00-2	-141	123	247	247	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 9:05:00 AM Validation Level: 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.00464	0.0841	1.00	0.171	pCi/L	U	U	

Analysis Method E904.0

Sample Name Outfall009_20170212_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/12/2017 9:05:00 AM Validation Level: 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.0355	0.279	1.00	0.489	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.113	0.351	3.00	0.608	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-145	165	500	320	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170212_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/12/2017 9:05:00 AM **Validation Level:** 8

Lab Sample Name: 440-176656-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.142	0.1115	1.00	0.0948	pCi/L		U	B

Validated Sample Result Forms: 4401773922

Analysis Method E900

Sample Name Outfall004_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:05:00 PM Validation Level: 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	1.54	0.795	3.00	0.944	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	1.81	0.708	4.00	0.915	pCi/L		U	B

Analysis Method E901.1

Sample Name Outfall004_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:05:00 PM Validation Level: 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	4.49	9.25	20.0	15.7	pCi/L	U	U	
Potassium-40	13966-00-2	-23.3	98.9	148	148	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall004_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:05:00 PM Validation Level: 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0521	0.0553	1.00	0.0839	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall004_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:05:00 PM Validation Level: 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.225	0.265	1.00	0.436	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.236	0.226	3.00	0.365	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-24.3	153	500	278	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall004_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:05:00 PM **Validation Level:** 8

Lab Sample Name: 440-177392-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.172	0.169	1.00	0.194	pCi/L	U	U	

Validated Sample Result Forms: 4401773932

Analysis Method E900

Sample Name Outfall009_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:10:00 AM Validation Level: 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.18	1.07	3.00	1.37	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	3.35	0.887	4.00	0.974	pCi/L		J	B, DNQ

Analysis Method E901.1

Sample Name Outfall009_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:10:00 AM Validation Level: 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	0.975	8.97	20.0	15.7	pCi/L	U	U	
Potassium-40	13966-00-2	-12.0	176	216	216	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:10:00 AM Validation Level: 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.124	0.0910	1.00	0.128	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall009_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:10:00 AM Validation Level: 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.590	0.318	1.00	0.464	pCi/L		U	B

Analysis Method E905.0

Sample Name Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.292	0.188	3.00	0.284	pCi/L		U	B

Analysis Method E906.0

Sample Name Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-24.8	156	500	286	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-177393-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.195	0.172	1.00	0.199	pCi/L	U	U	

Validated Sample Result Forms: 4401773942

Analysis Method E900

Sample Name Outfall002_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	4.56	1.60	3.00	1.44	pCi/L		J	B, *III
Gross Beta Analytes	GROSSBETA	4.20	1.00	4.00	1.03	pCi/L			

Analysis Method E901.1

Sample Name Outfall002_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	2.17	7.55	20.0	13.0	pCi/L	U	U	
Potassium-40	13966-00-2	-18.6	111	166	166	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0776	0.0818	1.00	0.130	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall002_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:00:00 PM Validation Level: 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.426	0.275	1.00	0.422	pCi/L		U	B

Analysis Method E905.0

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.349	0.370	3.00	0.602	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-31.1	164	500	307	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall002_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:00:00 PM **Validation Level:** 8

Lab Sample Name: 440-177394-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.574	0.248	1.00	0.167	pCi/L		U	B

Validated Sample Result Forms: 4401773952

Analysis Method E900

Sample Name Outfall018_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:40:00 PM Validation Level: 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.67	1.34	3.00	1.74	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	2.85	0.851	4.00	0.999	pCi/L		U	B

Analysis Method E901.1

Sample Name Outfall018_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:40:00 PM Validation Level: 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-1.47	10.9	20.0	19.1	pCi/L	U	U	
Potassium-40	13966-00-2	0.642	124	185	185	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall018_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:40:00 PM Validation Level: 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.270	0.125	1.00	0.121	pCi/L		U	B

Analysis Method E904.0

Sample Name Outfall018_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:40:00 PM Validation Level: 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.741	0.453	1.00	0.682	pCi/L		U	B

Analysis Method E905.0

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0409	0.374	3.00	0.660	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-25.2	157	500	287	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall018_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:40:00 PM **Validation Level:** 8

Lab Sample Name: 440-177395-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.257	0.170	1.00	0.148	pCi/L		U	B

Validated Sample Result Forms: 4401773962

Analysis Method E900

Sample Name Outfall001_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 10:40:00 AM Validation Level: 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	5.89	1.81	3.00	1.65	pCi/L		J	B, *III
Gross Beta Analytes	GROSSBETA	7.17	1.30	4.00	1.05	pCi/L			

Analysis Method E901.1

Sample Name Outfall001_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 10:40:00 AM Validation Level: 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	4.80	8.95	20.0	15.2	pCi/L	U	U	
Potassium-40	13966-00-2	54.2	96.4	158	158	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall001_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 10:40:00 AM Validation Level: 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.199	0.104	1.00	0.124	pCi/L		UJ	B, *III

Analysis Method E904.0

Sample Name Outfall001_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 10:40:00 AM Validation Level: 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.286	0.298	1.00	0.485	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.380	0.428	3.00	0.702	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	12.2	168	500	305	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall001_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 10:40:00 AM **Validation Level:** 8

Lab Sample Name: 440-177396-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.575	0.293	1.00	0.227	pCi/L		U	B

Validated Sample Result Forms: 4401773972

Analysis Method E900

Sample Name Outfall008_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:45:00 AM Validation Level: 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.19	1.14	3.00	1.49	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	2.66	0.811	4.00	0.954	pCi/L		U	B

Analysis Method E901.1

Sample Name Outfall008_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:45:00 AM Validation Level: 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	2.41	7.69	20.0	13.7	pCi/L	U	U	
Potassium-40	13966-00-2	-86.3	242	310	310	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall008_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:45:00 AM Validation Level: 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0715	0.0803	1.00	0.128	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall008_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 9:45:00 AM Validation Level: 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.433	0.299	1.00	0.583	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.131	0.357	3.00	0.619	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-36.9	153	500	282	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall008_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 9:45:00 AM **Validation Level:** 8

Lab Sample Name: 440-177397-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.450	0.284	1.00	0.275	pCi/L		U	B

Validated Sample Result Forms: 4401773982

Analysis Method E900

Sample Name Outfall006_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	4.90	1.71	3.00	1.69	pCi/L		J	B, *III
Gross Beta Analytes	GROSSBETA	7.74	1.32	4.00	0.937	pCi/L			

Analysis Method E901.1

Sample Name Outfall006_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	3.79	9.64	20.0	16.4	pCi/L	U	U	
Potassium-40	13966-00-2	14.6	83.3	145	145	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall006_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.287	0.124	1.00	0.115	pCi/L		U	B

Analysis Method E904.0

Sample Name Outfall006_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 11:15:00 AM Validation Level: 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.318	0.367	1.00	0.601	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.0236	0.337	3.00	0.601	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	262	189	500	293	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall006_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 11:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-177398-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.632	0.302	1.00	0.175	pCi/L		U	B

Validated Sample Result Forms: 4401773992

Analysis Method E900

Sample Name Outfall011_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:55:00 PM Validation Level: 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	2.66	1.08	3.00	1.09	pCi/L		UJ	B, *III
Gross Beta Analytes	GROSSBETA	3.98	0.919	4.00	0.885	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall011_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:55:00 PM Validation Level: 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-5.04	11.4	20.0	19.4	pCi/L	U	U	
Potassium-40	13966-00-2	-61.0	189	242	242	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall011_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:55:00 PM Validation Level: 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.282	0.132	1.00	0.130	pCi/L		UJ	B, *III

Analysis Method E904.0

Sample Name Outfall011_20170218_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/18/2017 12:55:00 PM Validation Level: 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.109	0.343	1.00	0.594	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.616	0.374	3.00	0.560	pCi/L		U	B

Analysis Method E906.0

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-37.4	159	500	294	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall011_20170218_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/18/2017 12:55:00 PM **Validation Level:** 8

Lab Sample Name: 440-177399-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.165	0.167	1.00	0.205	pCi/L	U	U	

Validated Sample Result Forms: 4401781672

Analysis Method E900

Sample Name Outfall002_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.506	0.871	3.00	1.53	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	1.73	0.715	4.00	0.967	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall002_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	2.42	7.98	20.0	10.9	pCi/L	U	U	
Potassium-40	13966-00-2	-82.2	154	238	238	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall002_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.167	0.0856	1.00	0.0979	pCi/L		UJ	B, *III

Analysis Method E904.0

Sample Name Outfall002_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:00:00 AM Validation Level: 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	-0.205	0.241	1.00	0.460	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	-0.0502	0.178	3.00	0.323	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-90.1	179	500	333	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall002_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-178167-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.294	0.197	1.00	0.188	pCi/L		U	B

Validated Sample Result Forms: 4401781682

Analysis Method E900

Sample Name Outfall018_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 8:10:00 AM Validation Level: 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	-1.54	0.826	3.00	2.12	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	2.17	0.730	4.00	0.937	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall018_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 8:10:00 AM Validation Level: 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-9.65	13.7	20.0	16.8	pCi/L	U	U	
Potassium-40	13966-00-2	60.9	120	165	165	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall018_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 8:10:00 AM Validation Level: 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0695	0.0715	1.00	0.112	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall018_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 8:10:00 AM Validation Level: 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.240	0.250	1.00	0.406	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.189	0.192	3.00	0.311	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-45.0	184	500	337	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall018_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 8:10:00 AM **Validation Level:** 8

Lab Sample Name: 440-178168-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.0595	0.1136	1.00	0.165	pCi/L	U	U	

Validated Sample Result Forms: 4401781692

Analysis Method E900

Sample Name Outfall009_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Gross Alpha Analytes	GROSSALPHA	0.793	0.988	3.00	1.63	pCi/L	U	UJ	*III
Gross Beta Analytes	GROSSBETA	1.02	0.643	4.00	0.959	pCi/L		J	DNQ

Analysis Method E901.1

Sample Name Outfall009_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Cesium-137	10045-97-3	-5.97	11.5	20.0	13.8	pCi/L	U	U	
Potassium-40	13966-00-2	-57.7	110	176	176	pCi/L	U	U	

Analysis Method E903.0

Sample Name Outfall009_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226	13982-63-3	0.0549	0.0730	1.00	0.122	pCi/L	U	UJ	*III

Analysis Method E904.0

Sample Name Outfall009_20170227_Comp Matrix Type: WM Result Type: TRG

Sample Date: 2/27/2017 9:50:00 AM Validation Level: 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-228	15262-20-1	0.257	0.262	1.00	0.424	pCi/L	U	U	

Analysis Method E905.0

Sample Name Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Strontium-90	10098-97-2	0.233	0.166	3.00	0.256	pCi/L	U	U	

Analysis Method E906.0

Sample Name Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Tritium	10028-17-8	-127	177	500	338	pCi/L	U	U	

Analysis Method HASL-300 U Mod

Sample Name Outfall009_20170227_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 2/27/2017 9:50:00 AM **Validation Level:** 8

Lab Sample Name: 440-178169-1

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Uranium	URANIUM	0.110	0.142	1.00	0.189	pCi/L	U	U	

4985 SW 74th Court, Miami, FL 33155 USA
Tel: (1) 786-220-0379, Fax: (1) 786-513-2733, Email: info@sourcemolecular.com

Human Fecal Toolbox ID™
Detection of the fecal Human gene biomarker for Human fecal contamination by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.
Date Received: February 21, 2017
Report Generated: March 15, 2017

SM #	Client #	Analysis Requested	Species	DNA Analytical Results
SM-7B21023	Outfall001_20170217_Grab	Human Bacteroidetes ID	Dorei	Present
SM-7B21025	FB001_20170217	Human Bacteroidetes ID	Dorei	Absent
SM-7B21026	Outfall008_20170217_Grab	Human Bacteroidetes ID	Dorei	Absent
SM-7B21027	Outfall006_20170217_Grab	Human Bacteroidetes ID	Dorei	Absent
SM-7B21028	Outfall011_20170217_Grab	Human Bacteroidetes ID	Dorei	Present
SM-7B21029	Outfall004_20170217_Grab	Human Bacteroidetes ID	Dorei	Absent

Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of Source Molecular Corporation, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to Source Molecular Corp. The company shall not be liable for any damages, either direct or consequential. Source Molecular Corp. provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact Source Molecular in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.

Laboratory Comments

Negative Results

In sample(s) classified as negative, the human-associated Bacteroidetes gene biomarker was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis. It is important to note that a negative result does not mean that the sample does not definitely have human fecal contamination. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution. In order to strengthen the result, a negative sample should be analyzed further for human fecal contamination with other DNA analytical tests. A list of human fecal ID tests can be found at www.sourcemolecular.com/human.

Positive Results

In sample(s) classified as positive, the human-associated Bacteroidetes gene biomarker(s) were detected in both test replicates suggesting that human fecal contamination is present in the water sample(s). The biomarker(s) serve as an indicator of the targeted fecal pollution, but the presence of the biomarker does not signify conclusively the presence of that form of fecal pollution. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

Human Fecal Reference Samples

The client is encouraged to submit samples from the surrounding wastewater facilities and/or septic systems in order to gain a better understanding of the concentration of the human-associated fecal Bacteroidetes genetic marker as well as the concentration of the general fecal Bacteroidetes genetic marker in the geographic region of interest. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

Each submitted water sample was filtered through 0.45 micron membrane filters. Each filter was placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample was homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol.

Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing the sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. ' All assays were run in duplicate.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and to reveal any false negatives or false positives. The accumulation of PCR product is detected and graphed in an amplification plot. If the fecal indicator organism is absent in the sample, this accumulation is not detected and the sample is considered negative. If accumulation of PCR product is detected, the sample is considered positive.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

Human Bacteroidetes ID™ Species: *B. stercoris*,
Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

¹Boehm, A., Fuhrman, J., Mrse, R., Grant, S. **Tiered approach for identification of a human fecal pollution source at a recreational beach: case study at Avalon Bay, Catalina Island, California.** Environ Sci Technol. 2003 37: 673–680.

²Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

³Bernhard, A., Field, K. **A PCR assay to discriminate human and ruminant feces on the basis of host differences in Bacteroides-Prevotella genes encoding 16S rRNA.** Appl. Environ. Microbiol. 2000b 66: 4571–4574.

⁴Ahmed, w., Masters, N., Toze, S. **Consistency in the host specificity and host sensitivity of the Bacteroides HF183 marker for sewage pollution tracking.** Lett. Appl. Microbiol. 2012 55: 283–289.

⁵Scott, T., Rose, J., Jenkins, T., Farrah, S., Lukasik, J. **Microbial Source Tracking: Current Methodology and Future Directions.** Appl. Environ. Microbiol. 2002 68: 5796–5803.

⁶Bernhard, A., Field, K. **Identification of nonpoint sources of fecal pollution in coastal waters by using host-specific 16S ribosomal DNA genetic markers from fecal anaerobes.** Appl. Environ. Microbiol. 2000a 66: 1587–1594.

⁷Fogarty, L., Voytek, M. **A Comparison of Bacteroides-Prevotella 16S rRNA Genetic Markers for Fecal Samples from Different Animal Species.** Appl. Environ. Microbiol. 2005 71: 5999–6007.

⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., *et al.* **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**

Human Fecal Pollution ID™ Quantification

Detection and quantification of the fecal Human gene biomarker for Human fecal contamination by real-time quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.

Date Received: February 21, 2017

Report Generated: March 27, 2017

SM #	Client #	Analysis Requested	Target	Marker Quantified (copies/100 ml)	DNA Analytical Results
SM-7B21021	R1_Pond_20170217_Grab	Human Bacteroidetes ID	Dorei	<LOQ	Present
SM-7B21022	Perimeter_Pond_20170217_Grab	Human Bacteroidetes ID	Dorei	3.75E+02	Present

<LOQ: Detected below level of quantification

Preliminary Interpretation of Human Fecal Pollution ID™ Results
 Detection and quantification of the fecal Human gene biomarker for Human fecal contamination by real-time quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Test America Inc.
Date Received: February 21, 2017
Report Generated: March 27, 2017

SM #	Client #	Approximate Contribution of Human Fecal Pollution in Water Sample	Comment
SM-7B21021	R1_Pond_20170217_Grab	Low Concentration	Low levels of Human fecal biomarker
SM-7B21022	Perimeter_Pond_20170217_Grab	Low Concentration	Low levels of Human fecal biomarker

Limitation of Damages – Repayment of Service Price

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Laboratory Comments

Submitter: Test America Inc.

Report Generated: March 27, 2017

Positive Results

In sample(s) classified as positive, the human-associated Bacteroidetes gene biomarker(s) were detected in both test replicates suggesting that human fecal contamination is present in the water sample(s). The biomarker(s) serve as an indicator of the targeted fecal pollution, but the presence of the biomarker does not signify conclusively the presence of that form of fecal pollution. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

<LOQ Results

In sample(s) classified as <LOQ, the human-associated Bacteroidetes biomarker were detected in both test replicates but in quantities below the limit of quantification. This result indicates that fecal indicators associated with human were present in the sample(s) but in low concentrations.

Human Fecal Reference Samples

The client is encouraged to submit samples from the surrounding wastewater facilities and/or septic systems in order to gain a better understanding of the concentration of the human-associated fecal Bacteroidetes genetic marker as well as the concentration of the general fecal Bacteroidetes genetic marker in the geographic region of interest. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Result Interpretations

Quantitative results are reported along with interpretations. Interpretations are given as "negative", "trace", "low concentration", "moderate concentration", or "high concentration" based on the concentration of the genetic markers found in the water samples.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

All reagents, chemicals and apparatuses were verified and inspected beforehand to ensure that no false negatives or positives could be generated. In that regard, positive and negative controls were run to attest the integrity of the analysis. All inspections and controls tested negative for possible extraneous contaminants, including PCR inhibitors.

Each submitted water sample was filtered through 0.45 micron membrane filters. Each filter was placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample was homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol.

Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. All assays were run in duplicate. Absolute quantification was achieved by extrapolating genome copy numbers from standard curves generated from serial dilutions of Human specific and generic genomic DNA.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and reveal any false negatives or false positives.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

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Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

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²Bakir, M., Sakamoto, M., Kitahara, M., Matsumoto, M., Benno, Y. **Bacteroides dorei sp. nov., isolated from human faeces.** Int. J. Syst. Evol. Microbiol. 2006 56: 1639–1641.

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⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., *et al.* **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**

Preliminary Interpretation of Human Fecal Pollution ID™ Results
 Detection and quantification of the fecal Human gene biomarker for Human fecal contamination by real-time quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Haley & Aldrich
Date Received: March 28, 2017
Report Generated: March 30, 2017

SM #	Client #	Approximate Contribution of Human Fecal Pollution in Water Sample	Comment
SM-7C28013	Silvernale_20170327_Grab	Not Detected	Human fecal biomarker not detected
SM-7C28014	R-1_20170327_Grab	Not Detected	Human fecal biomarker not detected
SM-7C28015	Perimeter_20170327_Grab	Not Detected	Human fecal biomarker not detected

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Human Fecal Pollution ID™ Quantification

Detection and quantification of the fecal Human gene biomarker for Human fecal contamination by real-time quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology

Submitter: Haley & Aldrich

Date Received: March 28, 2017

Report Generated: March 30, 2017

SM #	Client #	Analysis Requested	Target	Marker Quantified (copies/100 ml)	DNA Analytical Results
SM-7C28013	Silvernale_20170327_Grab	Human Bacteroidetes ID	Dorei	ND	Absent
SM-7C28014	R-1_20170327_Grab	Human Bacteroidetes ID	Dorei	ND	Absent
SM-7C28015	Perimeter_20170327_Grab	Human Bacteroidetes ID	Dorei	ND	Absent

ND: Not Detected

Laboratory Comments

Submitter: Haley & Aldrich

Report Generated: March 30, 2017

Negative Results

In sample(s) classified as negative, the human-associated Bacteroidetes gene biomarker(s) was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis. It is important to note that a negative result does not mean that the sample does not definitely have human fecal contamination. Only repeated sampling (both during wet and dry sampling events) will enable you to draw more definitive conclusions as to the contributor(s) of fecal pollution.

In order to strengthen the result, a negative sample should be analyzed further for human fecal contamination with other DNA analytical tests. A list of human fecal ID tests can be found at www.sourcemolecular.com/human.

Human Fecal Reference Samples

The client is encouraged to submit samples from the surrounding wastewater facilities and/or septic systems in order to gain a better understanding of the concentration of the human-associated fecal Bacteroidetes genetic marker as well as the concentration of the general fecal Bacteroidetes genetic marker in the geographic region of interest. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Result Interpretations

Quantitative results are reported along with interpretations. Interpretations are given as "negative", "trace", "low concentration", "moderate concentration", or "high concentration" based on the concentration of the genetic markers found in the water samples.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination. A list of available tests can be found at www.sourcemolecular.com/tests

DNA Analytical Method Explanation

All reagents, chemicals and apparatuses were verified and inspected beforehand to ensure that no false negatives or positives could be generated. In that regard, positive and negative controls were run to attest the integrity of the analysis. All inspections and controls tested negative for possible extraneous contaminants, including PCR inhibitors.

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Amplifications were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul containing sample extract, forward primer, reverse primer, probe and an optimized buffer. The following thermal cycling parameters were used: 50°C for 2 min, 95°C for 10 min and 40 cycles of 95°C for 15 s and 60°C for 1 min. All assays were run in duplicate. Absolute quantification was achieved by extrapolating genome copy numbers from standard curves generated from serial dilutions of Human specific and generic genomic DNA.

For quality control purposes, a positive control consisting of appropriate genomic DNA and a negative control consisting of PCR-grade water were run alongside the sample(s) to ensure a properly functioning reaction and reveal any false negatives or false positives.

Human Bacteroidetes ID™ Species: *B. dorei*

The **Human Bacteroidetes ID™ Species: *B. dorei*** service targets the species *Bacteroides dorei*. *B. dorei* is an anaerobe that is frequently shed from the gastrointestinal tract and isolated from human feces worldwide. It is a newly discovered species that is widely distributed in the USA.^{1,2} The human-associated marker DNA sequence is located on the 16S rRNA gene of *B. dorei*.³ The marker is the microbial source tracking (MST) marker of choice for detecting human fecal pollution due to its exceptional sensitivity and specificity. Internal validations have been conducted on hundreds of sewage, septage, human and animal host fecal samples collected from throughout the U.S and archived in the Source Molecular fecal bank. The marker has also been evaluated in both inland and coastal waters. A recent, comprehensive, multi-laboratory MST method evaluation study, exploring the performance of current MST methods, concluded the *B. dorei* qPCR assay to be the top performing human-associated assay amongst those tested. The success and consistency of this marker in numerous studies around the world^{1,3,4} makes the **Human Bacteroidetes ID™ Species: *B. dorei*** service the primary service for identifying human fecal pollution at Source Molecular.

Fecal *Bacteroidetes* are considered for several reasons an interesting alternative to more traditional indicator organisms such as *E. coli* and *Enterococci*.⁵ Since they are strict anaerobes, they are indicative of recent fecal contamination when found in water systems. This is a particularly strong reference point when trying to determine recent outbreaks in fecal pollution. They are also more abundant in feces of warm-blooded animals than *E. coli* and *Enterococci*.

The Human Bacteroidetes ID™ service is designed around the principle that fecal *Bacteroidetes* are found in large quantities in feces of warm-blooded animals.^{3,5,6,7,8} Furthermore, certain strains of *Bacteroidetes* have been found to be associated with humans.^{3,6} As such, these bacterial strains can be used as indicators of human fecal contamination.

Accuracy of the results is possible because the method amplifies DNA into a large number of small copies of the gene biomarker of interest. This is accomplished with small pieces of DNA called primers that are complementary and specific to the unique *B. dorei* DNA sequence. Through a heating process called thermal cycling, the double stranded DNA is denatured, hybridized to the complementary primers and amplified to create many copies of the DNA fragment desired. If the primers are successful in finding a site on the DNA fragment that is specific to the *B. dorei* DNA sequence, then billions of copies of the DNA fragment will be available and detected in real-time. The accumulation of DNA product is plotted as an amplification curve by the qPCR software. The absence of an amplification curve indicates that the *B. dorei* gene biomarker is not detected in the water sample because it is either not present or present at concentrations below the analytical detection limit.

To strengthen the validity of the results, additional tests targeting other high-ranking, human-associated *Bacteroidetes* species should be performed, such as

Human Bacteroidetes ID™ Species: *B. stercoris*,
Human Bacteroidetes ID™ Species: *B. fragilis*, and
Human Bacteroidetes ID™ Species: *B. thetaiotaomicron*.

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⁸Dick, L., Bernhard, A., Brodeur, T., Santo Domingo, J., *et al.* **Host Distributions of Uncultivated Fecal Bacteroidales Bacteria Reveal Genetic**