

2. DATA VALIDATION FINDINGS

2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Alta for dioxin/furan analysis and were received below the temperature limits of 4°C ±2°C at 0°C and 1.1°C; however, as the samples were not noted to have been frozen or damaged, no qualifications were required. According to the laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The cooler received by Alta had custody seals present and intact; however, custody seals were not present on the sample containers. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

2.3 CALIBRATION

2.3.1 Initial Calibration

The initial calibration was analyzed 05/09/05. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 16 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning and end of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

2.4 BLANKS

One method blank (6789-MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (6789-OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. In five of the six SDGs, the laboratory noted that detects above the low point of the calibration curve but below the EPA Method 1613 minimum level were denoted by an "A" laboratory qualifier. However, all results with "A" qualifier were actually below the low point of the calibration curve and should have been flagged as "J." Also, one of the detects which should have been flagged as "A" was incorrectly flagged as "J" by the laboratory. Any detects below the method minimum level were qualified as estimated, "J." If the concentration of any component of the total was below the lower method calibration level (MCL), the total detect was qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." The results and reporting limits were reported in $\mu\text{g/L}$ except for the results in sample Outfall 010 which were reported in ng/L . No further qualifications were required.



| Sample ID: IOD2043-01 | | Duffell 001 | | EPA Method 1613 | | | |
|----------------------------------|-----------------|---------------------------|----------------------|-------------------------------|---------------------------|----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | | |
| Name: Del Mar Analytical, Irvine | Matrix: Aqueous | Date Collected: 28-Apr-05 | Sample Size: 0.957 L | Lab Sample: 26117-001 | Date Received: 30-Apr-05 | | |
| Project: IOD2043 | | Time Collected: 1116 | | QC Batch No.: 6789 | Date Extracted: 17-May-05 | | |
| | | | | Date Analyzed DB-5: 19-May-05 | Date Analyzed DB-225: NA | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000132 | | IS 13C-2,3,7,8-TCDD | 60.8 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000179 | | 13C-1,2,3,7,8-PeCDD | 63.1 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000375 | | 13C-1,2,3,4,7,8-HxCDD | 61.3 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000354 | | 13C-1,2,3,6,7,8-HxCDD | 60.9 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000372 | | 13C-1,2,3,4,6,7,8-HpCDD | 53.8 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | 0.0000517 | | | 13C-OCDD | 34.9 | 17 - 157 | |
| OCDD | 0.000373 | | | 13C-2,3,7,8-TCDF | 65.0 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00000133 | | 13C-1,2,3,7,8-PeCDF | 66.4 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000165 | | 13C-2,3,4,7,8-PeCDF | 66.3 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000139 | | 13C-1,2,3,4,7,8-HxCDF | 57.6 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.00000862 | | 13C-1,2,3,6,7,8-HxCDF | 60.4 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.00000782 | | 13C-2,3,4,6,7,8-HxCDF | 63.2 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.00000881 | | 13C-1,2,3,7,8,9-HxCDF | 55.9 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000157 | | 13C-1,2,3,4,6,7,8-HpCDF | 44.4 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | 0.00000903 | | | 13C-1,2,3,4,7,8,9-HpCDF | 43.0 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000132 | | 13C-OCDF | 33.6 | 17 - 157 | |
| OCDF | 0.0000390 | | | CRS 37Cl-2,3,7,8-TCDD | 81.7 | 35 - 197 | |
| Totals | | | | | | | |
| Total TCDD | ND | 0.00000132 | | | | | |
| Total PeCDD | ND | 0.00000179 | | | | | |
| Total HxCDD | 0.0000114 | | | | | | |
| Total HpCDD | 0.000124 | | | | | | |
| Total TCDF | ND | 0.00000133 | | | | | |
| Total PeCDF | ND | 0.00000151 | | | | | |
| Total HxCDF | 0.00000540 | | | | | | |
| Total HpCDF | 0.0000268 | | | | | | |

Footnotes
 a. Sample specific estimated detection limit.
 b. Estimated maximum possible concentration.
 c. Method detection limit.
 d. Lower control limit - upper control limit.

AMEC VALIDATED
 LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:09

Project 26117



| Sample ID: IOD2044-01 | | Overfall 00Z | | EPA Method 1613 | | | |
|-----------------------|----------------------------|-----------------|-------------------|-------------------------|-----------|-----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | | |
| Name: | Del Mar Analytical, Irvine | Matrix: | Aqueous | Lab Sample: | 26112-001 | Date Received: | 30-Apr-05 |
| Project: | IOD2044 | Sample Size: | 0.950 L | QC Batch No.: | 6789 | Date Extracted: | 17-May-05 |
| Date Collected: | 28-Apr-05 | | | Date Analyzed DB-5: | 19-May-05 | Date Analyzed DB-225: | NA |
| Time Collected: | 1406 | | | | | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000199 | | IS 13C-2,3,7,8-TCDD | 61.2 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000294 | | 13C-1,2,3,7,8-PeCDD | 65.5 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000400 | | 13C-1,2,3,4,7,8-HxCDD | 63.8 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000399 | | 13C-1,2,3,6,7,8-HxCDD | 65.8 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000409 | | 13C-1,2,3,4,6,7,8-HpCDD | 61.5 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | 0.0000557 | | | 13C-OCDD | 45.0 | 17 - 157 | |
| OCDD | 0.000706 | | | 13C-2,3,7,8-TCDF | 66.5 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00000200 | | 13C-1,2,3,7,8-PeCDF | 63.6 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000362 | | 13C-2,3,4,7,8-PeCDF | 66.3 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000288 | | 13C-1,2,3,4,7,8-HxCDF | 65.2 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.00000117 | | 13C-1,2,3,6,7,8-HxCDF | 69.0 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.00000165 | | 13C-1,2,3,4,6,7,8-HxCDF | 70.5 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.00000118 | | 13C-1,2,3,7,8,9-HxCDF | 62.6 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000214 | | 13C-1,2,3,4,6,7,8-HpCDF | 58.0 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | 0.00000968 | | | 13C-1,2,3,4,7,8,9-HpCDF | 49.7 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000252 | | 13C-OCDF | 43.8 | 17 - 157 | |
| OCDF | 0.0000306 | | | CRS 37Cl-2,3,7,8-TCDD | 78.7 | 35 - 197 | |
| Totals | | | | | | | |
| Total TCDD | ND | 0.00000199 | | | | | |
| Total PeCDD | ND | 0.00000294 | | | | | |
| Total HxCDD | 0.00000660 | | 0.0000135 | | | | |
| Total HpCDD | 0.000114 | | | | | | |
| Total TCDF | 0.00000366 | | | | | | |
| Total PeCDF | ND | 0.00000322 | | | | | |
| Total HxCDF | 0.00000666 | | 0.00000980 | | | | |
| Total HpCDF | 0.0000253 | | | | | | |

AMEC VALIDATED
LEVEL IV

- Footnotes**
- a. Sample specific estimated detection limit.
 - b. Estimated maximum possible concentration.
 - c. Method detection limit.
 - d. Lower control limit - upper control limit.

Approved By: William J. Luksemburg 20-May-2005 10:57



| Sample ID: IOD2049 | | Client Data | | Sample Data | | Laboratory Data | | EPA Method 1613 | |
|--------------------|-----------|---------------------|----------------------------|-----------------|-------------------|---------------------|----------------------|-----------------------|-----------|
| Rev | Qual Code | Name: | Del Mar Analytical, Irvine | Matrix: | Aqueous | Lab Sample: | 26118-001 | Date Received: | 30-Apr-05 |
| | | Project: | IOD2049 | Sample Size: | 0.910 L | QC Batch No.: | 6789 | Date Extracted: | 17-May-05 |
| | | Date Collected: | 28-Apr-05 | DL ^a | EMPC ^b | Date Analyzed DB-5: | 19-May-05 | Date Analyzed DB-225: | NA |
| | | Time Collected: | 1516 | Conc. (ug/L) | Qualifiers | %R | LCL-UCL ^d | Qualifiers | |
| | | Analyte | | | | | | | |
| | | 2,3,7,8-TCDD | ND | 0.00000162 | | 65.5 | 25 - 164 | | |
| | | 1,2,3,7,8-PeCDD | ND | 0.00000180 | | 66.7 | 25 - 181 | | |
| | | 1,2,3,4,7,8-HxCDD | ND | 0.00000269 | | 64.4 | 32 - 141 | | |
| | | 1,2,3,6,7,8-HxCDD | ND | 0.00000265 | | 63.7 | 28 - 130 | | |
| | | 1,2,3,7,8,9-HxCDD | ND | 0.00000273 | | 60.1 | 23 - 140 | | |
| | | 1,2,3,4,6,7,8-HpCDD | 0.0000445 | | J | 44.7 | 17 - 157 | | |
| | | OCDD | 0.000477 | | | 70.2 | 24 - 169 | | |
| | | 2,3,7,8-TCDF | ND | 0.00000164 | | 66.1 | 24 - 185 | | |
| | | 1,2,3,7,8-PeCDF | ND | 0.00000218 | | 67.0 | 21 - 178 | | |
| | | 2,3,4,7,8-PeCDF | ND | 0.00000195 | | 65.1 | 26 - 152 | | |
| | | 1,2,3,4,7,8-HxCDF | ND | 0.00000105 | | 64.8 | 26 - 123 | | |
| | | 1,2,3,6,7,8-HxCDF | ND | 0.00000992 | | 69.4 | 28 - 136 | | |
| | | 2,3,4,6,7,8-HxCDF | ND | 0.00000107 | | 59.2 | 29 - 147 | | |
| | | 1,2,3,7,8,9-HxCDF | ND | 0.00000207 | | 55.7 | 28 - 143 | | |
| | | 1,2,3,4,6,7,8-HpCDF | 0.00000505 | | A | 49.5 | 26 - 138 | | |
| | | 1,2,3,4,7,8,9-HpCDF | ND | 0.00000211 | | 44.8 | 17 - 157 | | |
| | | OCDF | ND | 0.0000145 | | 87.0 | 35 - 197 | | |
| | | Totals | | | | | | | |
| | | Total TCDD | ND | 0.00000162 | | | | | |
| | | Total PeCDD | ND | 0.00000180 | | | | | |
| | | Total HxCDD | 0.00000896 | | | | | | |
| | | Total HpCDD | 0.00000879 | | | | | | |
| | | Total TCDF | 0.00000379 | | | | | | |
| | | Total PeCDF | ND | 0.00000206 | | | | | |
| | | Total HxCDF | 0.00000262 | | | | | | |
| | | Total HpCDF | 0.00000122 | 0.00000434 | | | | | |

Footnotes
a. Sample specific estimated detection limit.
b. Estimated maximum possible concentration.
c. Method detection limit.
d. Lower control limit - upper control limit.

AMEC VALIDATED
LEVEL IV

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:10

Project 26118



| Sample ID: IOD2053-01 | | Outfall 004 | | EPA Method 1613 | | |
|-----------------------|----------------------------|-----------------|-------------------|-----------------------|----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | |
| Name: | Del Mar Analytical, Irvine | Matrix: | Aqueous | Lab Sample: | 26120-001 | |
| Project: | IOD2053 | Sample Size: | 0.968 L | QC Batch No.: | 6789 | |
| Date Collected: | 28-Apr-05 | | | Date Analyzed DB-5: | 19-May-05 | |
| Time Collected: | 1140 | | | Date Analyzed DB-225: | NA | |
| | | | | Date Received: | 30-Apr-05 | |
| | | | | Date Extracted: | 17-May-05 | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000131 | | 70.3 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000171 | | 71.3 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000161 | | 69.9 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000164 | | 75.4 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000166 | | 66.2 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00000163 | 0.00000163 | 45.9 | 17 - 157 | |
| OCDD | 0.000234 | | | 72.7 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00000135 | | 70.7 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000133 | | 71.8 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000119 | | 73.2 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.000000591 | | 74.6 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.000000518 | | 75.6 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.000000586 | | 70.0 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000105 | | 62.5 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | 0.00000258 | | | 53.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000180 | A | 47.5 | 17 - 157 | |
| OCDF | ND | 0.00000877 | | 87.8 | 35 - 197 | |
| Totals | | | | | | |
| Total TCDD | ND | 0.00000131 | | | | |
| Total PeCDD | ND | 0.00000171 | | | | |
| Total HxCDD | 0.00000183 | | | | | |
| Total HpCDD | 0.00000189 | | 0.00000352 | | | |
| Total TCDF | ND | 0.00000135 | | | | |
| Total PeCDF | ND | 0.00000126 | | | | |
| Total HxCDF | 0.00000229 | | | | | |
| Total HpCDF | 0.00000723 | | | | | |

Footnotes

- a. Sample specific estimated detection limit.
- b. Estimated maximum possible concentration.
- c. Method detection limit.
- d. Lower control limit - upper control limit.

AMEC VALIDATED
LEVEL IV

Analyst RAS

Approved By: William J. Luksemburg 20-May-2005 11:13



| Sample ID: IOD2056-01 Outfall 609 | | EPA Method 1613 | | | | | | |
|-----------------------------------|----------------------|-------------------------------|---------------------------|------------|-------------------------|------|----------------------|------------|
| Client Data | | Laboratory Data | | | | | | |
| Name: Def Mat Analytical, Irvine | Matrix: Aqueous | Lab Sample: 26115-001 | Date Received: 30-Apr-05 | | | | | |
| Project: IOD2056 | Sample Size: 0.950 L | QC Batch No: 6789 | Date Extracted: 17-May-05 | | | | | |
| Date Collected: 28-Apr-05 | | Date Analyzed DB-5: 19-May-05 | Date Analyzed DB-225: NA | | | | | |
| Time Collected: 1213 | | | | | | | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Qualifiers | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000140 | | | 13C-2,3,7,8-TCDD | 66.6 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000144 | | | 13C-1,2,3,7,8-PeCDD | 70.0 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000241 | | | 13C-1,2,3,4,7,8-HxCDD | 71.1 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000237 | | | 13C-1,2,3,6,7,8-HxCDD | 71.9 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000244 | | | 13C-1,2,3,4,6,7,8-HpCDD | 63.5 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | 0.0000129 | | | A | 13C-OCDD | 36.0 | 17 - 157 | |
| OCDD | 0.000119 | | | | 13C-2,3,7,8-TCDF | 70.2 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.000000942 | | | 13C-1,2,3,7,8-PeCDF | 71.7 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000149 | | | 13C-2,3,4,7,8-PeCDF | 72.7 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000125 | | | 13C-1,2,3,4,7,8-HxCDF | 76.1 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.000000643 | | | 13C-1,2,3,6,7,8-HxCDF | 75.9 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.000000572 | | | 13C-2,3,4,6,7,8-HxCDF | 78.8 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.000000654 | | | 13C-1,2,3,7,8,9-HxCDF | 74.7 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000115 | | | 13C-1,2,3,4,6,7,8-HpCDF | 63.6 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00000154 | | | 13C-1,2,3,4,7,8,9-HpCDF | 66.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000136 | | | 13C-OCDF | 45.5 | 17 - 157 | |
| OCDF | ND | 0.00000672 | | | CRS 37Cl-2,3,7,8-TCDD | 80.5 | 35 - 197 | |
| Totals | | | | | | | | |
| Total TCDD | ND | 0.00000140 | | | | | | |
| Total PeCDD | ND | 0.00000144 | | | | | | |
| Total HxCDD | ND | 0.00000240 | | | | | | |
| Total HpCDD | 0.00000303 | | | | | | | |
| Total TCDF | ND | 0.000000942 | | | | | | |
| Total PeCDF | ND | 0.00000136 | | | | | | |
| Total HxCDF | 0.000000890 | | | | | | | |
| Total HpCDF | ND | 0.00000194 | | | | | | |

Footnotes

a. Sample specific estimated detection limit.
 b. Estimated maximum possible concentration.
 c. Method detection limit.
 d. Lower control limit - upper control limit.

AMEC VALIDATED
 LEVEL IV

Analysis: EAS

Approved By: William J. Luksemburg 20-May-2005 11:05



| Sample ID: IOD2058-01 | | Outfall 010 | | EPA Method 1613 | | | |
|-----------------------|----------------------------|-----------------|-------------------|-------------------------|-----------|----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | | |
| Name: | Del Mar Analytical, Irvine | Matrix: | Aqueous | Lab Sample: | 26116-001 | | |
| Project: | IOD2058 | Sample Size: | 0.957 L | QC Batch No.: | 6789 | | |
| Date Collected: | 28-Apr-05 | | | Date Analyzed DB-5: | 19-May-05 | | |
| Time Collected: | 1205 | | | Date Analyzed DB-225: | NA | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00139 | | 13C-2,3,7,8-TCDD | 53.3 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00165 | | 13C-1,2,3,7,8-PeCDD | 53.1 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00301 | | 13C-1,2,3,4,7,8-HxCDD | 62.6 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00283 | | 13C-1,2,3,6,7,8-HxCDD | 63.9 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00298 | | 13C-1,2,3,4,6,7,8-HpCDD | 52.7 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00774 | | 13C-OCDD | 29.8 | 17 - 157 | |
| OCDD | 0.0584 | | | 13C-2,3,7,8-TCDF | 57.5 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00166 | | 13C-1,2,3,7,8-PeCDF | 53.6 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00262 | | 13C-2,3,4,7,8-PeCDF | 55.9 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00218 | | 13C-1,2,3,4,7,8-HxCDF | 66.9 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.000772 | | 13C-1,2,3,6,7,8-HxCDF | 67.2 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.000738 | | 13C-2,3,4,6,7,8-HxCDF | 67.3 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.000842 | | 13C-1,2,3,7,8,9-HxCDF | 59.7 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00149 | | 13C-1,2,3,4,6,7,8-HpCDF | 51.2 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00231 | | 13C-1,2,3,4,7,8,9-HpCDF | 52.1 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00224 | | 13C-OCDF | 36.1 | 17 - 157 | |
| OCDF | ND | 0.00980 | | CRS 37Cl-2,3,7,8-TCDD | 76.1 | 35 - 197 | |
| Totals | | | | | | | |
| Total TCDD | ND | 0.00139 | | | | | |
| Total PeCDD | ND | 0.00165 | | | | | |
| Total HxCDD | ND | 0.00293 | | | | | |
| Total HpCDD | ND | 0.0137 | | | | | |
| Total TCDF | ND | 0.00166 | | | | | |
| Total PeCDF | ND | 0.00239 | | | | | |
| Total HxCDF | ND | 0.000911 | | | | | |
| Total HpCDF | ND | 0.00309 | | | | | |

Footnotes
 a. Sample specific estimated detection limit.
 b. Estimated maximum possible concentration.
 c. Method detection limit.
 d. Lower control limit - upper control limit.

AMEC VALIDATED
 LEVEL IV

Analyst: RAS
 Approved By: William J. Luksemburg 20-May-2005 11:07

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental
 355 South Teller Street
 Suite 300
 Lakewood, CO 80226

Package ID T711MT89
 Task Order 313150010, 313150012
 SDG No. IOD2031, 2053, 2055

No. of Analyses 3

Laboratory Del Mar Analytical
 Reviewer P. Meeks
 Analysis/Method Metals

| |
|---|
| Date: <u>06/27/05</u> |
| Reviewer's Signature <i>P. Meeks</i> |

| ACTION ITEMS ^a | |
|---|---|
| 1. Case Narrative Deficiencies | |
| 2. Out of Scope Analyses | |
| 3. Analyses Not Conducted | |
| 4. Missing Hardcopy Deliverables | |
| 5. Incorrect Hardcopy Deliverables | |
| 6. Deviations from Analysis Protocol, e.g., | <p>Detects below the reporting limit.</p> <p>Holding Times _____</p> <p>GC/MS Tune/Inst. Performance _____</p> <p>Calibrations _____</p> <p>Blanks _____</p> <p>Surrogates _____</p> <p>Matrix Spike/Dup LCS _____</p> <p>Field QC _____</p> <p>Internal Standard Performance _____</p> <p>Compound Identification and Quantitation _____</p> <p>System Performance _____</p> |
| COMMENTS^b | |
| | |
| | |
| | |
| <p>^a Subcontracted analytical laboratory is not meeting contract and/or method requirements.</p> <p>^b Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.</p> | |

Data Qualifier Reference Table

| Qualifier | Organics | Inorganics |
|-----------|---|--|
| U | The analyte was analyzed for, but was not detected above the reported sample quantitation limit. | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |
| J | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. | The associated value is an estimated quantity. |
| N | The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification." | Not applicable. |
| NJ | The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration. | Not applicable. |
| UJ | The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. | The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise. |
| R | The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified. | The data are unusable. (Note: Analyte may or may not be present). |

Qualification Code Reference Table

| Qualifier | Organics | Inorganics |
|-----------|--|--|
| H | Holding times were exceeded. | Holding times were exceeded. |
| S | Surrogate recovery was outside QC limits. | The sequence or number of standards used for the calibration was incorrect |
| C | Calibration %RSD or %D were noncompliant. | Correlation coefficient is <0.995. |
| R | Calibration RRF was <0.05. | %R for calibration is not within control limits. |
| B | Presumed contamination from preparation (method) blank. | Presumed contamination from preparation (method) or calibration blank. |
| L | Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits. | Laboratory Control Sample %R was not within control limits. |
| Q | MS/MSD recovery was poor or RPD high. | MS recovery was poor. |
| E | Not applicable. | Duplicates showed poor agreement. |
| I | Internal standard performance was unsatisfactory. | ICP ICS results were unsatisfactory. |
| A | Not applicable. | ICP Serial Dilution %D were not within control limits. |
| M | Tuning (BFB or DFTPP) was noncompliant. | Not applicable. |
| T | Presumed contamination from trip blank. | Not applicable. |
| + | False positive – reported compound was not present. Not applicable. | |
| - | False negative – compound was present but not reported. | Not applicable. |
| F | Presumed contamination from FB, or ER. | Presumed contamination from FB or ER. |
| \$ | Reported result or other information was incorrect. | Reported result or other information was incorrect. |
| ? | TIC identity or reported retention time has been changed. | Not applicable. |
| D | The analysis with this flag should not be used because another more technically sound analysis is available. | The analysis with this flag should not be used because another more technically sound analysis is available. |
| P | Instrument performance for pesticides was poor. | Post Digestion Spike recovery was not within control limits. |
| DNQ | The compound was detected between the MDL and the RL and, by definition, is considered an estimated value. | The compound was detected between the MDL and the RL and, by definition, is considered an estimated value. |

*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).



DATA VALIDATION REPORT

NPDES
Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOD2051, IOD2053, IOD2055

Prepared by

AMEC—Denver Operations
355 South Teller Street, Suite 300
Lakewood, Colorado 80226

1. INTRODUCTION

Task Order Title: NPDES Monitoring
Contract Task Order #: 313150010, 313150012
SDG#: IOD205, IOD2053, IOD2055
Project Manager: B. McIlvaine
Matrix: Water
Analysis: Metals
QC Level: Level IV
No. of Samples: 3
No. of Reanalyses/Dilutions: 0
Reviewer: P. Meeks
Date of Review: June 29, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the “R” data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample identification

| Client ID | EPA ID | Laboratory ID | Matrix | COC Method |
|-------------|-------------|---------------|--------|------------|
| Outfall 003 | Outfall 003 | IOD2051-01 | water | ILM04 |
| Outfall 004 | Outfall 004 | IOD2053-01 | water | ILM04 |
| Outfall 006 | Outfall 006 | IOD2055-01 | water | ILM04 |

2. DATA VALIDATION FINDINGS

2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. A duplicate sample was listed on the COCs for all samples; however, duplicate analyses were not necessary. As the samples were delivered to the laboratory by courier, custody seals were not required. No sample qualifications were required.

2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP/MS metals. No qualifications were required.

2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for the ICP/MS metals. The reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

2.4 BLANKS

Lead was not detected in any of the blank analyses associated with the samples in these SDGs. No qualifications were required.

2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferents sulfur, phosphorus, carbon, and chloride. Lead was not spiked into the ICSAB solution. Potassium in both the ICSA and ICSAB and sodium in the ICSA were recovered above the linear range of the calibration. The validator reviewed the raw data for the site sample ICP/MS analyses for the level of reported interferents, Al, Ca, Fe, and Mg, and determined that the levels of reported interferents were not high enough to cause matrix effects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, and chloride. No further qualifications were required.

2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP/MS LCS sample was identified as 5D29095-BS1. The LCS result on the summary form and in the raw data were within the laboratory-established ICP/MS control limits of 85-115%. No qualifications were required.

2.7 LABORATORY DUPLICATES

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

2.8 MATRIX SPIKE

No MS/MSD or duplicate analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion. Method accuracy was assessed based on LCS results. No qualifications were required.

2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analysis of these samples; therefore, furnace atomic absorption QC is not applicable.

2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. Analytes detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.



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 2520 E. Sunset Rd. #1, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3620

MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 003

Report Number: IOD2051

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|---------------------|
| Sample ID: IOD2051-01 (DRAFT: Outfall 003 - Water) | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | |
| Lead | EPA 200.8 | SD29095 | 0.15 | 1.0 | 3.5 | 1 | 04/29/05 | 05/03/05 | Rev Qual Qual Col |

AMEC VALIDATED

LEVEL

DRAFT REPORT
 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 004

Report Number: IOD2053

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers | Rev Qual | Qual Code |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|----------|-----------|
| Sample ID: IOD2053-01 (DRAFT: Outfall 004 - Water) | | | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | | | |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 0.68 | 1 | 04/29/05 | 05/03/05 | J | J | DNQ |

**AMEC VALIDATED
 LEVEL 1**

DRAFT REPORT
 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers | Raw Qual | Qual Code |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|----------|-----------|
| Sample ID: IOD2055-01 (DRAFT: Outfall 006 - Water) | | | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | | | |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 0.44 | 1 | 04/29/05 | 05/03/05 | J | J | DNQ |

AMEC VALIDATED

LEVEL III

DRAFT REPORT
 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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APPENDIX G

Section 5

Outfall 005

Del Mar Analytical Laboratory Reports

AMEC Data Validation Reports



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project: Routine Outfall 005

Sampled: 04/28/05
Received: 04/28/05
Issued: 06/20/05 16:58

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID
IOD2054-01

CLIENT ID
Outfall 005

MATRIX
Water

Reviewed By:

Del Mar Analytical, Irvine
Michele Harper
Project Manager



Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05

Received: 04/28/05

METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|
| Sample ID: IOD2054-01 (Outfall 005 - Water) | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | |
| Antimony | EPA 200.8 | 5D29095 | 0.18 | 2.0 | 0.31 | 1 | 04/29/05 | 05/03/05 | J |
| Cadmium | EPA 200.8 | 5D29095 | 0.015 | 1.0 | 0.058 | 1 | 04/29/05 | 05/03/05 | J |
| Copper | EPA 200.8 | 5D29095 | 0.49 | 2.0 | 2.0 | 1 | 04/29/05 | 05/03/05 | |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 0.24 | 1 | 04/29/05 | 05/03/05 | J |
| Mercury | EPA 245.1 | 5D29061 | 0.063 | 0.20 | ND | 1 | 04/29/05 | 04/29/05 | |

Del Mar Analytical, Irvine
 Michele Harper
 Project Manager

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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05

Received: 04/28/05

INORGANICS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers |
|--|-----------|---------|--------------|--------------------|------------------|--------------------|-------------------|------------------|--------------------|
| Sample ID: IOD2054-01 (Outfall 005 - Water) - cont. | | | | | | | | | |
| Reporting Units: mg/l | | | | | | | | | |
| Chloride | EPA 300.0 | 5D28116 | 0.26 | 0.50 | 2.9 | 1 | 04/28/05 | 04/29/05 | |
| Nitrate/Nitrite-N | EPA 300.0 | 5D28116 | 0.072 | 0.26 | 4.2 | 1 | 04/28/05 | 04/29/05 | |
| Oil & Grease | EPA 413.1 | 5E04036 | 0.94 | 5.0 | ND | 1 | 05/04/05 | 05/04/05 | |
| Sulfate | EPA 300.0 | 5D28116 | 0.18 | 0.50 | 5.0 | 1 | 04/28/05 | 04/29/05 | |
| Total Dissolved Solids | SM2540C | 5E01033 | 10 | 10 | 94 | 1 | 05/01/05 | 05/01/05 | |
| Total Suspended Solids | EPA 160.2 | 5E04071 | 10 | 10 | ND | 1 | 05/04/05 | 05/04/05 | |

Del Mar Analytical, Irvine
Michele Harper
Project Manager



MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
Received: 04/28/05

SHORT HOLD TIME DETAIL REPORT

| Sample ID: Outfall 005 (IOD2054-01) - Water EPA 300.0 | Hold Time (in days) | Date/Time Sampled | Date/Time Received | Date/Time Extracted | Date/Time Analyzed |
|--|------------------------|----------------------|-----------------------|------------------------|-----------------------|
| | 2 | 04/28/2005 10:52 | 04/28/2005 18:15 | 04/28/2005 21:30 | 04/29/2005 01:48 |

Del Mar Analytical, Irvine
Michele Harper
Project Manager



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MWH-Pasadena/Boeing
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 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
 Received: 04/28/05

METHOD BLANK/QC DATA

METALS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | RPD Limits | RPD RPD | Data Limit | Qualifiers |
|---|--------|-----------------|-------|-------|-------------|---------------------------|-----------|------------|---------|------------|------------|
| Batch: 5D29061 Extracted: 04/29/05 | | | | | | | | | | | |
| Blank Analyzed: 04/29/2005 (5D29061-BLK1) | | | | | | | | | | | |
| Mercury | ND | 0.20 | 0.063 | ug/l | | | | | | | |
| LCS Analyzed: 04/29/2005 (5D29061-BS1) | | | | | | | | | | | |
| Mercury | 8.06 | 0.20 | 0.063 | ug/l | 8.00 | | 101 | 85-115 | | | |
| Matrix Spike Analyzed: 04/29/2005 (5D29061-MS1) | | | | | | | | | | | |
| | | | | | | Source: IOD2033-03 | | | | | |
| Mercury | 7.76 | 0.20 | 0.063 | ug/l | 8.00 | ND | 97 | 70-130 | | | |
| Matrix Spike Dup Analyzed: 04/29/2005 (5D29061-MSD1) | | | | | | | | | | | |
| | | | | | | Source: IOD2033-03 | | | | | |
| Mercury | 7.82 | 0.20 | 0.063 | ug/l | 8.00 | ND | 98 | 70-130 | 1 | 20 | |
| Batch: 5D29095 Extracted: 04/29/05 | | | | | | | | | | | |
| Blank Analyzed: 05/03/2005 (5D29095-BLK1) | | | | | | | | | | | |
| Antimony | ND | 2.0 | 0.18 | ug/l | | | | | | | |
| Cadmium | ND | 1.0 | 0.015 | ug/l | | | | | | | |
| Copper | ND | 2.0 | 0.49 | ug/l | | | | | | | |
| Lead | ND | 1.0 | 0.13 | ug/l | | | | | | | |
| LCS Analyzed: 05/03/2005 (5D29095-BS1) | | | | | | | | | | | |
| Antimony | 87.8 | 2.0 | 0.18 | ug/l | 80.0 | | 110 | 85-115 | | | |
| Cadmium | 87.8 | 1.0 | 0.015 | ug/l | 80.0 | | 110 | 85-115 | | | |
| Copper | 78.5 | 2.0 | 0.49 | ug/l | 80.0 | | 98 | 85-115 | | | |
| Lead | 81.9 | 1.0 | 0.13 | ug/l | 80.0 | | 102 | 85-115 | | | |
| Matrix Spike Analyzed: 05/03/2005 (5D29095-MS1) | | | | | | | | | | | |
| | | | | | | Source: IOD2054-01 | | | | | |
| Antimony | 98.9 | 2.0 | 0.18 | ug/l | 80.0 | 0.31 | 123 | 70-130 | | | |
| Cadmium | 86.7 | 1.0 | 0.015 | ug/l | 80.0 | 0.058 | 108 | 70-130 | | | |
| Copper | 79.4 | 2.0 | 0.49 | ug/l | 80.0 | 2.0 | 97 | 70-130 | | | |
| Lead | 80.9 | 1.0 | 0.13 | ug/l | 80.0 | 0.24 | 101 | 70-130 | | | |

Del Mar Analytical, Irvine
 Michele Harper
 Project Manager



Del Mar Analytical

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 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
 Received: 04/28/05

METHOD BLANK/QC DATA

METALS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | Limits | RPD | RPD Limit | Data Qualifiers |
|---------|--------|-----------------|-----|-------|-------------|---------------|-----------|--------|-----|-----------|-----------------|
|---------|--------|-----------------|-----|-------|-------------|---------------|-----------|--------|-----|-----------|-----------------|

Batch: 5D29095 Extracted: 04/29/05

Matrix Spike Analyzed: 05/03/2005 (5D29095-MS2)

Source: IOD2149-03

| | | | | | | | | | | | |
|----------|------|-----|-------|------|------|------|-----|--------|--|--|--|
| Antimony | 100 | 10 | 0.90 | ug/l | 80.0 | ND | 125 | 70-130 | | | |
| Cadmium | 76.0 | 5.0 | 0.075 | ug/l | 80.0 | 0.45 | 94 | 70-130 | | | |
| Copper | 90.1 | 10 | 2.4 | ug/l | 80.0 | 17 | 91 | 70-130 | | | |
| Lead | 73.5 | 5.0 | 0.65 | ug/l | 80.0 | 1.1 | 90 | 70-130 | | | |

Matrix Spike Dup Analyzed: 05/03/2005 (5D29095-MSD1)

Source: IOD2054-01

| | | | | | | | | | | | |
|----------|------|-----|-------|------|------|-------|-----|--------|---|----|--|
| Antimony | 99.6 | 2.0 | 0.18 | ug/l | 80.0 | 0.31 | 124 | 70-130 | 1 | 20 | |
| Cadmium | 87.7 | 1.0 | 0.015 | ug/l | 80.0 | 0.058 | 110 | 70-130 | 1 | 20 | |
| Copper | 81.3 | 2.0 | 0.49 | ug/l | 80.0 | 2.0 | 99 | 70-130 | 2 | 20 | |
| Lead | 81.0 | 1.0 | 0.13 | ug/l | 80.0 | 0.24 | 101 | 70-130 | 0 | 20 | |

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 Michele Harper
 Project Manager

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
 Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | RPD Limits | RPD | RPD Limit | Data Qualifiers |
|--|--------|-----------------|-------|-------|-------------|--------------------|-----------|------------|-----|-----------|-----------------|
| Batch: 5D28116 Extracted: 04/28/05 | | | | | | | | | | | |
| Blank Analyzed: 04/28/2005 (5D28116-BLK1) | | | | | | | | | | | |
| Chloride | ND | 0.50 | 0.26 | mg/l | | | | | | | |
| Nitrate/Nitrite-N | ND | 0.26 | 0.072 | mg/l | | | | | | | |
| Sulfate | ND | 0.50 | 0.18 | mg/l | | | | | | | |
| LCS Analyzed: 04/28/2005 (5D28116-BS1) | | | | | | | | | | | |
| Chloride | 4.82 | 0.50 | 0.26 | mg/l | 5.00 | | 96 | 90-110 | | | M-3 |
| Sulfate | 9.63 | 0.50 | 0.18 | mg/l | 10.0 | | 96 | 90-110 | | | M-3 |
| Batch: 5E01033 Extracted: 05/01/05 | | | | | | | | | | | |
| Blank Analyzed: 05/01/2005 (5E01033-BLK1) | | | | | | | | | | | |
| Total Dissolved Solids | ND | 10 | 10 | mg/l | | | | | | | |
| LCS Analyzed: 05/01/2005 (5E01033-BS1) | | | | | | | | | | | |
| Total Dissolved Solids | 956 | 10 | 10 | mg/l | 1000 | | 96 | 90-110 | | | |
| Duplicate Analyzed: 05/01/2005 (5E01033-DUP1) | | | | | | | | | | | |
| Total Dissolved Solids | 285 | 10 | 10 | mg/l | | Source: IOD2237-01 | | | 2 | 10 | |
| Batch: 5E04036 Extracted: 05/04/05 | | | | | | | | | | | |
| Blank Analyzed: 05/04/2005 (5E04036-BLK1) | | | | | | | | | | | |
| Oil & Grease | ND | 5.0 | 0.94 | mg/l | | | | | | | |
| LCS Analyzed: 05/04/2005 (5E04036-BS1) | | | | | | | | | | | |
| Oil & Grease | 18.5 | 5.0 | 0.94 | mg/l | 20.0 | | 92 | 65-120 | | | M-NRI |

Del Mar Analytical, Irvine
 Michele Harper
 Project Manager



MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05

Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | Limit | RPD | RPD Limit | Data Qualifiers |
|--|--------|-----------------|------|-------|-------------|--------------------|-----------|--------|-----|-----------|-----------------|
| Batch: 5E04036 Extracted: 05/04/05 | | | | | | | | | | | |
| LCS Dup Analyzed: 05/04/2005 (5E04036-BSD1) | | | | | | | | | | | |
| Oil & Grease | 18.9 | 5.0 | 0.94 | mg/l | 20.0 | | 94 | 65-120 | 2 | 20 | |
| Batch: 5E04071 Extracted: 05/04/05 | | | | | | | | | | | |
| Blank Analyzed: 05/04/2005 (5E04071-BLK1) | | | | | | | | | | | |
| Total Suspended Solids | ND | 10 | 10 | mg/l | | | | | | | |
| LCS Analyzed: 05/04/2005 (5E04071-BS1) | | | | | | | | | | | |
| Total Suspended Solids | 1000 | 10 | 10 | mg/l | 1000 | | 100 | 85-115 | | | |
| Duplicate Analyzed: 05/04/2005 (5E04071-DUP1) | | | | | | | | | | | |
| Total Suspended Solids | ND | 10 | 10 | mg/l | | Source: IOD2054-01 | | | | 10 | |

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Michele Harper
Project Manager



MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
Received: 04/28/05

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

| LabNumber | Analysis | Analyte | Units | Result | MRL | Compliance Limit |
|------------|----------------------|------------------------|-------|--------|------|------------------|
| IOD2054-01 | 413.1 Oil and Grease | Oil & Grease | mg/l | 0.096 | 5.0 | 15 |
| IOD2054-01 | Antimony-200.8 | Antimony | ug/l | 0.31 | 2.0 | 6.00 |
| IOD2054-01 | Cadmium-200.8 | Cadmium | ug/l | 0.058 | 1.0 | 4.00 |
| IOD2054-01 | Chloride - 300.0 | Chloride | mg/l | 2.90 | 0.50 | 150 |
| IOD2054-01 | Copper-200.8 | Copper | ug/l | 2.00 | 2.0 | 14 |
| IOD2054-01 | Mercury - 245.1 | Mercury | ug/l | 0.019 | 0.20 | 0.20 |
| IOD2054-01 | Nitrogen, NO3+NO2 -N | Nitrate/Nitrite-N | mg/l | 4.20 | 0.26 | 10.00 |
| IOD2054-01 | Sulfate-300.0 | Sulfate | mg/l | 5.00 | 0.50 | 250 |
| IOD2054-01 | TDS - SM 2540C | Total Dissolved Solids | mg/l | 94 | 10 | 850 |

Del Mar Analytical, Irvine
Michele Harper
Project Manager



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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
Received: 04/28/05

DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference

Del Mar Analytical, Irvine
Michele Harper
Project Manager

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IOD2054 <Page 10 of 11>



MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05

Received: 04/28/05

Certification Summary

Del Mar Analytical, Irvine

| Method | Matrix | Nelac | California |
|-----------|--------|-------|------------|
| EPA 160.2 | Water | X | X |
| EPA 200.8 | Water | X | X |
| EPA 245.1 | Water | X | X |
| EPA 300.0 | Water | X | X |
| EPA 413.1 | Water | X | X |
| SM2540C | Water | X | X |

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

Subcontracted Laboratories

Alta Analytical California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR
Samples: IOD2054-01

Analysis Performed: EDD + Level 4
Samples: IOD2054-01

Del Mar Analytical, Irvine
Michele Harper
Project Manager



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June 20, 2005

MWH- Pasadena / Boeing
300 North Lake Avenue, Suite 1200
Pasadena , CA 91101

Attention: Bronwyn Kelly
Project: Routine Outfall 005
Sampled: 04/28/05
Del Mar Analytical Number: IOD2054

Dear Ms. Kelly:

Alta Analytical Laboratories performed the EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans for the project referenced above. Please use the following cross-reference table when reviewing your results.

| MWH ID | Del Mar ID | Alta ID |
|-------------|------------|-----------|
| Outfall 005 | IOD2054-01 | 26113-001 |

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022, extension 215.

Sincerely yours,

DEL MAR ANALYTICAL


Michele Harper
Project Manager

Enclosure



May 20, 2005

Alta Project I.D.: 26113

Ms. Michele Harper
Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the results for the one aqueous sample received at Alta Analytical Laboratory on April 30, 2005 under your Project Name "IOD2054". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at mmaier@altalab.com. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

A handwritten signature in cursive script that reads "Martha M. Maier".

Martha M. Maier
Director of HRMS Services



Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.



Alta Analytical Laboratory Inc.

1104 Windfield Way
El Dorado Hills, CA 95762
FAX (916) 673-0106
(916) 933-1640

Section I: Sample Inventory Report

Date Received: 4/30/2005

Alta Lab. ID

Client Sample ID

26113-001

IOD2054-01

SECTION II



| Method Blank | | EPA Method 1613 | | | | | | |
|----------------------|---------------------------|---------------------|-------------------------------|--------------------------|---|------|----------------------|------------|
| Matrix: Aqueous | QC Batch No.: 6789 | Lab Sample: 0-MB001 | Date Analyzed DB-5: 19-May-05 | Date Analyzed DB-225: NA | | | | |
| Sample Size: 1.000 L | Date Extracted: 17-May-05 | | | | | | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Qualifiers | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000124 | | | IS 13C-2,3,7,8-TCDD | 69.9 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000166 | | | 13C-1,2,3,7,8-PeCDD | 84.1 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000186 | | | 13C-1,2,3,4,7,8-HxCDD | 72.5 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000179 | | | 13C-1,2,3,6,7,8-HxCDD | 75.3 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000186 | | | 13C-1,2,3,4,6,7,8-HpCDD | 65.8 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00000303 | | | 13C-OCDD | 58.4 | 17 - 157 | |
| OCDD | ND | 0.00000677 | | | 13C-2,3,7,8-TCDF | 81.1 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00000924 | | | 13C-1,2,3,7,8-PeCDF | 79.5 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000226 | | | 13C-2,3,4,7,8-PeCDF | 82.4 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000193 | | | 13C-1,2,3,4,7,8-HxCDF | 72.6 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.00000785 | | | 13C-1,2,3,6,7,8-HxCDF | 75.4 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.00000731 | | | 13C-2,3,4,6,7,8-HxCDF | 92.3 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.00000672 | | | 13C-1,2,3,7,8,9-HxCDF | 68.4 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000158 | | | 13C-1,2,3,4,6,7,8-HpCDF | 63.5 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00000969 | | | 13C-1,2,3,4,7,8,9-HpCDF | 52.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000192 | | | 13C-OCDF | 49.2 | 17 - 157 | |
| OCDF | ND | 0.00000476 | | | CRS 37Cl-2,3,7,8-TCDD | 89.9 | 35 - 197 | |
| Totals | | | | | | | | |
| Total TCDD | ND | 0.00000124 | | | Footnotes | | | |
| Total PeCDD | ND | 0.00000166 | | | a. Sample specific estimated detection limit. | | | |
| Total HxCDD | ND | 0.00000183 | | | b. Estimated maximum possible concentration. | | | |
| Total HpCDD | ND | 0.00000303 | | | c. Method detection limit. | | | |
| Total TCDF | ND | 0.00000924 | | | d. Lower control limit - upper control limit. | | | |
| Total PeCDF | ND | 0.00000209 | | | | | | |
| Total HxCDF | ND | 0.00000872 | | | | | | |
| Total HpCDF | ND | 0.00000132 | | | | | | |

Analyst: William J. Luksemburg 20-May-2005 10:59



EPA Method 1613

| OPR Results | | Lab Sample: 0-OPR001 | | Date Analyzed DB-5: 19-May-05 | | Date Analyzed DB-225: NA | |
|---------------------|-------------|----------------------|------------|-------------------------------|---------|--------------------------|-----------|
| Matrix: | Aqueous | QC Batch No.: | 6789 | Sample Size: | 1.000 L | Date Extracted: | 17-May-05 |
| Analyte | Spike Conc. | Conc. (ng/mL) | OPR Limits | Labeled Standard | %R | LCL-UCL | |
| 2,3,7,8-TCDD | 10.0 | 10.3 | 6.7 - 15.8 | <u>IS</u> 13C-2,3,7,8-TCDD | 66.3 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | 50.0 | 51.8 | 35 - 71 | 13C-1,2,3,7,8-PeCDD | 82.1 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | 50.0 | 50.1 | 35 - 82 | 13C-1,2,3,4,7,8-HxCDD | 69.4 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | 50.0 | 52.2 | 38 - 67 | 13C-1,2,3,6,7,8-HxCDD | 74.5 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | 50.0 | 54.3 | 32 - 81 | 13C-1,2,3,4,6,7,8-HpCDD | 64.6 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | 50.0 | 49.7 | 35 - 70 | 13C-OCDD | 40.2 | 17 - 157 | |
| OCDD | 100 | 99.1 | 78 - 144 | 13C-2,3,7,8-TCDF | 71.3 | 24 - 169 | |
| 2,3,7,8-TCDF | 10.0 | 10.1 | 7.5 - 15.8 | 13C-1,2,3,7,8-PeCDF | 78.8 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | 50.0 | 49.0 | 40 - 67 | 13C-2,3,4,7,8-PeCDF | 85.0 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | 50.0 | 49.2 | 34 - 80 | 13C-1,2,3,4,7,8-HxCDF | 72.8 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | 50.0 | 48.2 | 36 - 67 | 13C-1,2,3,6,7,8-HxCDF | 78.4 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | 50.0 | 48.8 | 42 - 65 | 13C-2,3,4,6,7,8-HxCDF | 82.5 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | 50.0 | 48.4 | 35 - 78 | 13C-1,2,3,7,8,9-HxCDF | 69.8 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | 50.0 | 49.7 | 39 - 65 | 13C-1,2,3,4,6,7,8-HpCDF | 58.1 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | 50.0 | 49.7 | 41 - 61 | 13C-1,2,3,4,7,8,9-HpCDF | 45.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | 50.0 | 50.6 | 39 - 69 | 13C-OCDF | 36.3 | 17 - 157 | |
| OCDF | 100 | 93.6 | 63 - 170 | <u>CRS</u> 37Cl-2,3,7,8-TCDD | 85.6 | 35 - 197 | |

Analyst: RAS
 Approved By: William J. Luksemburg 20-May-2005 10:59



| Sample ID: IOD2054-01 | | EPA Method 1613 | | | | | |
|---|----------------------|-------------------------------|---------------------------|-------------------------|------|----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | | |
| Name: Del Mar Analytical, Irvine | Matrix: Aqueous | Lab Sample: 26113-001 | Date Received: 30-Apr-05 | | | | |
| Project: IOD2054 | Sample Size: 0.943 L | QC Batch No.: 6789 | Date Extracted: 17-May-05 | | | | |
| Date Collected: 28-Apr-05 | | Date Analyzed DB-5: 19-May-05 | Date Analyzed DB-225: NA | | | | |
| Time Collected: 1052 | | | | | | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000162 | | IS 13C-2,3,7,8-TCDD | 65.2 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000196 | | 13C-1,2,3,7,8-PeCDD | 68.9 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000297 | | 13C-1,2,3,4,7,8-HxCDD | 60.9 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000286 | | 13C-1,2,3,6,7,8-HxCDD | 64.2 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000297 | | 13C-1,2,3,4,6,7,8-HpCDD | 55.8 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00000421 | | 13C-OCDD | 36.4 | 17 - 157 | |
| OCDD | ND | 0.0000161 | | 13C-2,3,7,8-TCDF | 67.8 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.0000194 | | 13C-1,2,3,7,8-PeCDF | 64.5 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.0000278 | | 13C-2,3,4,7,8-PeCDF | 66.5 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.0000232 | | 13C-1,2,3,4,7,8-HxCDF | 63.6 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.00000933 | | 13C-1,2,3,6,7,8-HxCDF | 66.1 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.00000917 | | 13C-2,3,4,6,7,8-HxCDF | 66.2 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.00000991 | | 13C-1,2,3,7,8,9-HxCDF | 57.6 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.0000193 | | 13C-1,2,3,4,6,7,8-HpCDF | 46.3 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.0000135 | | 13C-1,2,3,4,7,8,9-HpCDF | 41.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.0000263 | | 13C-OCDF | 34.7 | 17 - 157 | |
| OCDF | ND | 0.00000485 | | CRS 37Cl-2,3,7,8-TCDD | 87.2 | 35 - 197 | |
| Totals | | | | | | | |
| Total TCDD | ND | 0.00000162 | | | | | |
| Total PeCDD | ND | 0.00000196 | | | | | |
| Total HxCDD | ND | 0.00000293 | | | | | |
| Total HpCDD | ND | 0.00000421 | | | | | |
| Total TCDF | ND | 0.00000194 | | | | | |
| Total PeCDF | ND | 0.00000254 | | | | | |
| Total HxCDF | ND | 0.00000112 | | | | | |
| Total HpCDF | ND | 0.00000185 | | | | | |
| Footnotes | | | | | | | |
| a. Sample specific estimated detection limit. | | | | | | | |
| b. Estimated maximum possible concentration. | | | | | | | |
| c. Method detection limit. | | | | | | | |
| d. Lower control limit - upper control limit. | | | | | | | |

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 10:59

APPENDIX

DATA QUALIFIERS & ABBREVIATIONS

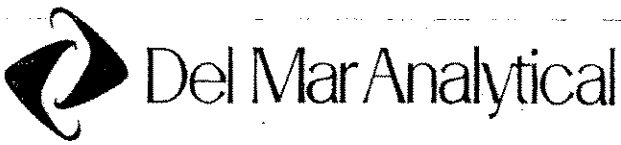
| | |
|-------|--|
| B | This compound was also detected in the method blank. |
| D | The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference. |
| H | The signal-to-noise ratio is greater than 10:1. |
| I | Chemical Interference |
| J | The amount detected is below the Lower Calibration Limit of the instrument. |
| P | Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit. |
| * | See Cover Letter |
| Conc. | Concentration |
| DL | Sample-specific estimated detection limit |
| MDL | The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested. |
| EMPC | Estimated Maximum Possible Concentration |
| NA | Not applicable |
| RL | Reporting Limit – concentrations that correspond to low calibration point |
| ND | Not Detected |
| TEQ | Toxic Equivalency |

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.

CURRENT CERTIFICATIONS

NELAP — (Primary AA: California, Certificate No. 02102CA)
Department of the Navy
U.S. Army Corps of Engineers
U.S. EPA Region 5
Bureau of Reclamation — Mid-Pacific Region — (MP-470, Res-1.10)
Commonwealth of Kentucky — (Certificate No. 90063)
Commonwealth of Virginia — (Certificate No. 00013)
State of Alaska, Department of Environmental Conservation — (Certificate No. OS-00197)
State of Arizona — (Certificate No. AZ0639)
State of Arkansas, Department of Health — (Approval granted through CA certification)
State of Arkansas, Department of Environmental Quality
State of California — (Certificate No. 1640)
State of Colorado
State of Connecticut — (Certificate No. PH-0182)
State of Florida — (Certificate No. 87456)
State of Louisiana, Department of Health and Hospitals — (Certificate No. LA000014)
State of Louisiana, Department of Environmental Quality
State of Maine
State of Michigan (Certificate No. 81178087)
State of Mississippi — (Approval granted through CA certification)
State of Nevada — (Certificate No. CA413)
State of New Jersey — (Certificate No. CA003)
State of New York, Department of Health — (Certificate No. 11411)
State of North Carolina — (Certification No. 06700)
State of North Dakota, Department of Health — (Certificate No. R-078)
State of New Mexico
State of Oklahoma — (D9919)
State of Oregon — (Certificate No. CA413)
State of Pennsylvania — (Certificate No. 68-490)
State of South Carolina — (Certificate No. 87002001)
State of Tennessee — (Certificate No. 02996)
State of Texas — (Certificate No. TX247-1000A)
State of Utah — (Certificate No. E-201)
State of Washington — (Certification No. C091)
State of Wisconsin — (Certificate No. 998036160)
State of Wyoming — (USEPA Region 8 Ref: 8TMS-Q)



17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228
 1014 E. Cooley Dr., Suite A, Cotton, CA 92324 Ph (909) 370-4857 Fax (909) 370-1046
 9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689
 9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851
 2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOD2054

| SENDING LABORATORY: | RECEIVING LABORATORY: |
|---|---|
| Del Mar Analytical, Irvine 17461 Derian Avenue, Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Michele Harper | Alta Analytical 1104 Windfield Way El Dorado Hills, CA 95762 Phone : (916) 933-1640 Fax: (916) 673-0106 <i>26113</i> <i>1.1°C</i> |

Standard TAT is requested unless specific due date is requested => Due Date: _____ Initials: _____

| Analysis | Expiration | Comments |
|-----------------------------|-------------------------|---|
| Sample ID: IOD2054-01 Water | Sampled: 04/28/05 10:52 | Instant Notification |
| 1613-Dioxin-HR | 05/05/05 10:52 | J flags, 17 congeners, no TEQ, sub=Alta, DP to AMEC |
| EDD + Level 4 | 05/26/05 10:52 | Excel EDD email to pm, Include Std logs for Lvl IV |
| Containers Supplied: | | |
| 1 L Amber (IOD2054-01C) | | |
| 1 L Amber (IOD2054-01D) | | |

SAMPLE INTEGRITY:

| | | |
|---|--|---|
| All containers intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | Sample labels/COC agree: <input type="checkbox"/> Yes <input type="checkbox"/> No | Samples Received On Ice: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Custody Seals Present: <input type="checkbox"/> Yes <input type="checkbox"/> No | Samples Preserved Properly: <input type="checkbox"/> Yes <input type="checkbox"/> No | Samples Received at (temp): _____ |

~~Released By~~ ~~4/29/05 17:00~~ ~~M Jellat~~ ~~4/30/05 0915~~
 Released By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
 Released By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

STANDARD OPERATING PROCEDURE

Attachment 10.B.1

SAMPLE LOG-IN CHECKLIST

ALTA Project No.: 26113

| | | | | | |
|---|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------|
| 1. Date Samples Arrived: | <u>4/30/05 0915</u> | Initials: | <u>MCU</u> | Location: | <u>WR-2</u> |
| 2. Time / Date logged in: | <u>0925 5/2/05</u> | Initials: | <u>CB</u> | Location: | <u>WR-2</u> |
| 3. Samples Arrived By: (circle) | <u>FedEx</u> | UPS | World Courier | Other: | |
| 4. Shipping Preservation: (circle) | <u>Ice / Blue Ice</u> | / Dry Ice / None | Temp °C | <u>1.1</u> | |
| 5. Shipping Container(s) Intact? If not, describe condition in comment section. | | YES | NO | NA | |
| 6. Shipping Container(s) Custody Seals Present? Intact? If not intact, describe condition in comment section. | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 7. Shipping Documentation Present? (circle) Shipping Label Tracking Number | <u>Airbill</u> <u>7916 1353 5260</u> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 8. Sample Custody Seal(s) Present? No. of Seals _____ or Seal No. Intact? If not intact, describe condition in comment section. | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 9. Sample Container Intact? If no, indicate sample condition in comment section. | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 10. Chain of Custody (COC) or other Sample Documentation Present? | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. COC/Documentation Acceptable? If no, complete COC Anomaly Form. | | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 12. Shipping Container (circle): ALTA <u>Client</u> Retain or <u>Return</u> or Disposed | | | | | |
| 13. Container(s) and/or Bottle(s) Requested? | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 14. Drinking Water Sample? (HRMS Only) If yes, Acceptable Preservation? Y or N Preservation Info From? (circle) COC or Sample Container or None Noted | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |

Comments: Sampler's initials found on sample labels

ALTA Analytical Laboratory
El Dorado Hills, CA 95762

Data Qualifier Reference Table

| Qualifier | Organics | Inorganics |
|-----------|---|--|
| U | The analyte was analyzed for, but was not detected above the reported sample quantitation limit. | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |
| J | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. | The associated value is an estimated quantity. |
| N | The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification." | Not applicable. |
| NJ | The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration. | Not applicable. |
| UJ | The analyte was not deemed above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. | The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise. |
| R | The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified. | The data are unusable. (Note: Analyte may or may not be present). |

Qualification Code Reference Table

| Qualifier | Organics | Inorganics |
|-----------|--|--|
| H | Holding times were exceeded. | Holding times were exceeded. |
| S | Surrogate recovery was outside QC limits. | The sequence or number of standards used for the calibration was incorrect |
| C | Calibration %RSD or %D were noncompliant. | Correlation coefficient is <0.995. |
| R | Calibration RRF was <0.05. | %R for calibration is not within control limits. |
| B | Presumed contamination from preparation (method) blank. | Presumed contamination from preparation (method) or calibration blank. |
| L | Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits. | Laboratory Control Sample %R was not within control limits. |
| Q | MS/MSD recovery was poor or RPD high. | MS recovery was poor. |
| E | Not applicable. | Duplicates showed poor agreement. |
| I | Internal standard performance was unsatisfactory. | ICP ICS results were unsatisfactory. |
| A | Not applicable. | ICP Serial Dilution %D were not within control limits. |
| M | Tuning (BFB or DFTPP) was noncompliant. | Not applicable. |
| T | Presumed contamination from trip blank. | Not applicable. |
| + | False positive – reported compound was not present. Not applicable. | |
| - | False negative – compound was present but not reported. | Not applicable. |
| F | Presumed contamination from FB, or ER. | Presumed contamination from FB or ER. |
| \$ | Reported result or other information was incorrect. | Reported result or other information was incorrect. |
| ? | TIC identity or reported retention time has been changed. | Not applicable. |
| D | The analysis with this flag should not be used because another more technically sound analysis is available. | The analysis with this flag should not be used because another more technically sound analysis is available. |
| P | Instrument performance for pesticides was poor. | Post Digestion Spike recovery was not within control limits. |
| DNQ | The compound was detected between the MDL and the RL and, by definition, is considered an estimated value. | The compound was detected between the MDL and the RL and, by definition, is considered an estimated value. |

*#

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).

Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits).



DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOD2051, IOD2054, & IOD2055

Prepared by

AMEC—Denver Operations
550 South Wadsworth Boulevard, Suite 500
Lakewood, Colorado 80226

1. INTRODUCTION

Task Order Title: NPDES Monitoring
Contract Task Order #: 313150010
Sample Delivery Group #: IOD2051, IOD2054, & IOD2055
Project Manager: B. McIlvaine
Matrix: Water
Analysis: Dioxins/Furans
QC Level: Level IV
No. of Samples: 3
No. of Reanalyses/Dilutions: 0
Reviewer: H. Chang
Date of Review: May 31, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

| Client ID | Laboratory ID (Del Mar) | Laboratory ID (Alta) | Matrix | COC Method |
|-------------|----------------------------|-------------------------|--------|------------|
| Outfall 003 | IOD2051-01 | 26119-001 | water | 1613 |
| Outfall 005 | IOD2054-01 | 26113-001 | water | 1613 |
| Outfall 006 | IOD2055-01 | 26114-001 | water | 1613 |

2. DATA VALIDATION FINDINGS

2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at Del Mar Analytical within the temperature limits of 4°C ±2°C. The samples were shipped to Alta for dioxin/furan analysis and were received below the temperature limits of 4°C ±2°C at 1.1°C; however, as the samples were not noted to have been frozen or damaged, no qualifications were required. According to the laboratory login sheets, the samples were received intact and in good condition at both laboratories. No qualifications were required.

2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in these SDGs. As the samples were couriered directly to Del Mar Analytical, custody seals were not required. The cooler received by Alta had custody seals present and intact; however, custody seals were not present on the sample containers. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

2.3 CALIBRATION

2.3.1 Initial Calibration

The initial calibration was analyzed 05/19/05. The calibration consisted of six concentration level standards (CS0 through CS5) analyzed to verify instrument linearity. The initial calibration was acceptable with %RSDs $\leq 20\%$ for the 16 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning and end of each analytical sequence. The VERs were acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

2.4 BLANKS

One method blank (6789-MB001) was extracted and analyzed with the samples in these SDGs. There were no target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives. No qualifications were required.

2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

One Ongoing Precision Recovery (OPR) sample (6789-OPR001) was extracted and analyzed with the samples in these SDGs. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. No qualifications were required.

2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in these SDGs. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

2.7.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

2.7.2 Field Duplicates

No field duplicate samples were identified for these SDGs.

2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. No qualifications were required.

2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Detects above the low point of the calibration curve but below the EPA Method 1613 minimum level were denoted by the laboratory with an "A," flag and were qualified as estimated, "J." Any detects below the lower method calibration level (MCL) were qualified as estimated, "J." If the concentration of any component of the total was below the lower method calibration level (MCL), the total detect was qualified as estimated, "J." Any reported EMPC was qualified as an estimated nondetect, "UJ." The results and reporting limits were reported in ug/L for samples Outfall 003 and Outfall 005 and in ng/L for sample Outfall 006. No further qualifications were required.



| Sample ID: IOD2051-01 | | Outfall 003 | | EPA Method 1613 | | | | | |
|-----------------------|----------------------------|---------------------|--------------|-----------------------|-------------------|------------|------|----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | | | | |
| Name: | Del Mar Analytical, Irvine | Matrix: | Aqueous | Lab Sample: | 26119-001 | | | | |
| Project: | IOD2051 | Sample Size: | 0.961 L | QC Batch No.: | 6789 | | | | |
| Date Collected: | 28-Apr-05 | | | Date Analyzed DB-5: | 19-May-05 | | | | |
| Time Collected: | 1340 | | | Date Analyzed DB-225: | NA | | | | |
| Rev | Qual Code | Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Qualifiers | %R | LCL-UCL ^d | Qualifiers |
| | | 2,3,7,8-TCDD | ND | 0.00000118 | | | 61.5 | 25 - 164 | |
| | | 1,2,3,7,8-PeCDD | ND | 0.00000210 | | | 67.1 | 25 - 181 | |
| | | 1,2,3,4,7,8-HxCDD | ND | 0.00000331 | | | 65.3 | 32 - 141 | |
| | | 1,2,3,6,7,8-HxCDD | ND | 0.00000325 | | | 68.4 | 28 - 130 | |
| | | 1,2,3,7,8,9-HxCDD | ND | 0.00000335 | | | 57.8 | 23 - 140 | |
| | | 1,2,3,4,6,7,8-HpCDD | 0.0000247 | | | | 49.8 | 17 - 157 | |
| | | OCDD | 0.000242 | | | | 66.9 | 24 - 169 | |
| | | 2,3,7,8-TCDF | ND | 0.00000141 | | | 67.7 | 24 - 185 | |
| | | 1,2,3,7,8-PeCDF | ND | 0.00000196 | | | 68.2 | 21 - 178 | |
| | | 2,3,4,7,8-PeCDF | ND | 0.00000167 | | | 68.1 | 26 - 152 | |
| | | 1,2,3,4,7,8-HxCDF | ND | 0.00000587 | | | 68.1 | 26 - 123 | |
| | | 1,2,3,6,7,8-HxCDF | ND | 0.00000571 | | | 71.4 | 28 - 136 | |
| | | 2,3,4,6,7,8-HxCDF | ND | 0.00000600 | | | 63.3 | 29 - 147 | |
| | | 1,2,3,7,8,9-HxCDF | ND | 0.00000117 | | | 53.2 | 28 - 143 | |
| | | 1,2,3,4,6,7,8-HpCDF | ND | 0.000000979 | | | 47.7 | 26 - 138 | |
| | | 1,2,3,4,7,8,9-HpCDF | ND | 0.00000182 | | | 41.7 | 17 - 157 | |
| | | OCDF | ND | | | | 83.1 | 35 - 197 | |
| | | Totals | | 0.00000663 | | | | | |
| | | Total TCDD | ND | 0.00000118 | | | | | |
| | | Total PeCDD | ND | 0.00000210 | | | | | |
| | | Total HxCDD | ND | 0.00000330 | | | | | |
| | | Total HpCDD | 0.0000494 | | | | | | |
| | | Total TCDF | ND | 0.00000141 | | | | | |
| | | Total PeCDF | ND | 0.00000181 | | | | | |
| | | Total HxCDF | 0.00000136 | | | | | | |
| | | Total HpCDF | 0.00000504 | | | | | | |
| | | Totals | | | | | | | |
| | | Total TCDD | ND | 0.00000118 | | | | | |
| | | Total PeCDD | ND | 0.00000210 | | | | | |
| | | Total HxCDD | ND | 0.00000330 | | | | | |
| | | Total HpCDD | 0.0000494 | | | | | | |
| | | Total TCDF | ND | 0.00000141 | | | | | |
| | | Total PeCDF | ND | 0.00000181 | | | | | |
| | | Total HxCDF | 0.00000136 | | | | | | |
| | | Total HpCDF | 0.00000504 | | | | | | |
| | | Totals | | | | | | | |
| | | Total TCDD | ND | 0.00000118 | | | | | |
| | | Total PeCDD | ND | 0.00000210 | | | | | |
| | | Total HxCDD | ND | 0.00000330 | | | | | |
| | | Total HpCDD | 0.0000494 | | | | | | |
| | | Total TCDF | ND | 0.00000141 | | | | | |
| | | Total PeCDF | ND | 0.00000181 | | | | | |
| | | Total HxCDF | 0.00000136 | | | | | | |
| | | Total HpCDF | 0.00000504 | | | | | | |
| | | Totals | | | | | | | |

AMEC VALIDATED

LEVEL IV

- Footnotes**
- a. Sample specific estimated detection limit.
 - b. Estimated maximum possible concentration.
 - c. Method detection limit.
 - d. Lower control limit - upper control limit.

Analyst: RAS

Approved By: William J. Luksemburg 20-May-2005 11:12



Sample ID: IOD2054-01 Outfall 005

EPA Method 1613

Client Data
 Name: Del Mar Analytical, Irvine
 Project: IOD2054
 Date Collected: 28-Apr-05
 Time Collected: 1052

Laboratory Data
 Lab Sample: 26113-001
 QC Batch No.: 6789
 Date Analyzed DB-5: 19-May-05
 Date Analyzed DB-225: NA

Date Received: 30-Apr-05
 Date Extracted: 17-May-05

| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Qualifiers | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
|---------------------|--------------|-----------------|-------------------|------------|-------------------------|------|----------------------|------------|
| | | | | | | | | |
| 2,3,7,8-TCDD | ND | 0.00000162 | | | IS 13C-2,3,7,8-TCDD | 65.2 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000196 | | | 13C-1,2,3,7,8-PeCDD | 68.9 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000297 | | | 13C-1,2,3,4,7,8-HxCDD | 60.9 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000286 | | | 13C-1,2,3,6,7,8-HxCDD | 64.2 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000297 | | | 13C-1,2,3,4,6,7,8-HpCDD | 55.8 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00000421 | | | 13C-OCDD | 36.4 | 17 - 157 | |
| OCDD | ND | 0.0000161 | | | 13C-2,3,7,8-TCDF | 67.8 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00000194 | | | 13C-1,2,3,7,8-PeCDF | 64.5 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000278 | | | 13C-2,3,4,7,8-PeCDF | 66.5 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000232 | | | 13C-1,2,3,4,7,8-HxCDF | 63.6 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.00000933 | | | 13C-1,2,3,6,7,8-HxCDF | 66.1 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.00000917 | | | 13C-2,3,4,6,7,8-HxCDF | 66.2 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.00000991 | | | 13C-1,2,3,7,8,9-HxCDF | 57.6 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000193 | | | 13C-1,2,3,4,6,7,8-HpCDF | 46.3 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00000135 | | | 13C-1,2,3,4,7,8,9-HpCDF | 41.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000263 | | | 13C-OCDF | 34.7 | 17 - 157 | |
| OCDF | ND | 0.00000485 | | | CRS 37Cl-2,3,7,8-TCDD | 87.2 | 35 - 197 | |

Totals

| | | | | |
|-------------|----|------------|--|--|
| Total TCDD | ND | 0.00000162 | | |
| Total PeCDD | ND | 0.00000196 | | |
| Total HxCDD | ND | 0.00000293 | | |
| Total HpCDD | ND | 0.00000421 | | |
| Total TCDF | ND | 0.00000194 | | |
| Total PeCDF | ND | 0.00000254 | | |
| Total HxCDF | ND | 0.00000112 | | |
| Total HpCDF | ND | 0.00000185 | | |

Analyst: RAS

AMEC VALIDATED

LEVEL IV

Approved By: William J. Luksemburg 20-May-2005 10:59



Sample ID: IOD2055-01 *Cutfall 006*

EPA Method 1613

Client Data
 Name: Del Mar Analytical, Irvine
 Project: IOD2055
 Date Collected: 28-Apr-05
 Time Collected: 1116

Laboratory Data
 Lab Sample: 26114-001
 QC Batch No.: 6789
 Date Analyzed DB-5: 19-May-05
 Date Analyzed DB-225: NA

Date Received: 30-Apr-05
 Date Extracted: 17-May-05

Sample Data
 Matrix: Aqueous
 Sample Size: 0.930 L

| Analyte | Conc. (ng/L) | DL ^a | EMPC ^b | Qualifiers | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
|---------------------|--------------|-----------------|-------------------|------------|------------------------------|------|----------------------|------------|
| 2,3,7,8-TCDD | ND | 0.00159 | | | 13C-2,3,7,8-TCDD | 68.4 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00212 | | | 13C-1,2,3,7,8-PeCDD | 74.2 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00247 | | | 13C-1,2,3,4,7,8-HxCDD | 64.7 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00236 | | | 13C-1,2,3,6,7,8-HxCDD | 68.7 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00246 | | | 13C-1,2,3,4,6,7,8-HpCDD | 60.7 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00323 | | | 13C-OCDD | 41.3 | 17 - 157 | |
| OCDD | 0.0294 | | | | | | | |
| 2,3,7,8-TCDF | ND | 0.00144 | | J | 13C-2,3,7,8-TCDF | 68.3 | 24 - 169 | |
| 1,2,3,7,8-PeCDF | ND | 0.00282 | | | 13C-1,2,3,7,8-PeCDF | 69.9 | 24 - 185 | |
| 2,3,4,7,8-PeCDF | ND | 0.00224 | | | 13C-2,3,4,7,8-PeCDF | 73.1 | 21 - 178 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.000746 | | | 13C-1,2,3,4,7,8-HxCDF | 69.2 | 26 - 152 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.000691 | | | 13C-1,2,3,6,7,8-HxCDF | 70.4 | 26 - 123 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.000794 | | | 13C-2,3,4,6,7,8-HxCDF | 72.7 | 28 - 136 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00142 | | | 13C-1,2,3,7,8,9-HxCDF | 62.8 | 29 - 147 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00103 | | | 13C-1,2,3,4,6,7,8-HpCDF | 54.0 | 28 - 143 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00205 | | | 13C-1,2,3,4,7,8,9-HpCDF | 49.5 | 26 - 138 | |
| OCDF | ND | 0.00715 | | | 13C-OCDF | 39.5 | 17 - 157 | |
| Totals | | | | | CRS 37Cl-2,3,7,8-TCDD | 88.7 | 35 - 197 | |

Footnotes

a. Sample specific estimated detection limit.
 b. Estimated maximum possible concentration.
 c. Method detection limit.
 d. Lower control limit - upper control limit.

AMEC VALIDATED
LEVEL IV

Approved By: William J. Luksemburg 20-May-2005 11:00

Data Qualifier Reference Table

| Qualifier | Organics | Inorganics |
|-----------|---|--|
| U | The analyte was analyzed for, but was not detected above the reported sample quantitation limit. | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |
| J | The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. | The associated value is an estimated quantity. |
| N | The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification." | Not applicable. |
| NJ | The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration. | Not applicable. |
| UJ | The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. | The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise. |
| R | The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified. | The data are unusable. (Note: Analyte may or may not be present). |

Qualification Code Reference Table

| Qualifier | Organics | Inorganics |
|-----------|--|--|
| H | Holding times were exceeded. | Holding times were exceeded. |
| S | Surrogate recovery was outside QC limits. | The sequence or number of standards used for the calibration was incorrect |
| C | Calibration %RSD or %D were noncompliant. | Correlation coefficient is <0.995. |
| R | Calibration RRF was <0.05. | %R for calibration is not within control limits. |
| B | Presumed contamination from preparation (method) blank. | Presumed contamination from preparation (method) or calibration blank. |
| L | Laboratory Blank Spike/Blank Spike Duplicate %R was not within control limits. | Laboratory Control Sample %R was not within control limits. |
| Q | MS/MSD recovery was poor or RPD high. | MS recovery was poor. |
| E | Not applicable. | Duplicates showed poor agreement. |
| I | Internal standard performance was unsatisfactory. | ICP ICS results were unsatisfactory. |
| A | Not applicable. | ICP Serial Dilution %D were not within control limits. |
| M | Tuning (BFB or DFTPP) was noncompliant. | Not applicable. |
| T | Presumed contamination from trip blank. | Not applicable. |
| + | False positive – reported compound was not present. Not applicable. | Not applicable. |
| - | False negative – compound was present but not reported. | Not applicable. |
| F | Presumed contamination from FB, or ER. | Presumed contamination from FB or ER. |
| \$ | Reported result or other information was incorrect. | Reported result or other information was incorrect. |
| ? | TIC identity or reported retention time has been changed. | Not applicable. |
| D | The analysis with this flag should not be used because another more technically sound analysis is available. | The analysis with this flag should not be used because another more technically sound analysis is available. |
| P | Instrument performance for pesticides was poor. | Post Digestion Spike recovery was not within control limits. |
| DNQ | The compound was detected between the MDL and the RL and, by definition, is considered an estimated value. | The compound was detected between the MDL and the RL and, by definition, is considered an estimated value. |
| *# | Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits). | Unusual problems found with the data that have been described in Section 2.#, "Data Validation Findings." The number following the asterisk (*) will indicate the subsection where a description of the problem can be found (eg. *1 would indicate a sample was not within temperature limits). |



DATA VALIDATION REPORT

NPDES Monitoring

ANALYSIS: METALS

SAMPLE DELIVERY GROUPS: IOD2043, IOD2049, IOD2054,
IOD2056, IOD2058

Prepared by

AMEC—Denver Operations
550 South Wadsworth Boulevard, Suite 500
Lakewood, Colorado 80226

1. INTRODUCTION

Task Order Title: NPDES Monitoring
Contract Task Order #: 313150010
SDG#: IOD2043, IOD2049, IOD2054, IOD2056, IOD2058
Project Manager: B. McIlvaine
Matrix: Water
Analysis: Metals
QC Level: Level IV
No. of Samples: 5
No. of Reanalyses/Dilutions: 2
Reviewer: L. Jarusewic
Date of Review: June 6, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Levels III and IV ICP-MS Metals, (DVP-5-A, Rev.0)*, *AMEC Data Validation Procedure for Levels III and IV ICP Metals (DVP-5, Rev. 0)*, *SW-846 Method 6020B for Inductively Coupled Plasma – Mass Spectrometry*, *SW-846 Method 7471A for Mercury (Manual Cold-Vapor Technique)*, and validation guidelines outlined in the *USEPA CLP National Functional Guidelines for Inorganic Data Review (2/94)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample identification

| Client ID | EPA ID | Laboratory ID | Matrix | COC Method |
|----------------|----------------|---------------|--------|------------|
| Outfall 001 | Outfall 001 | IOD2043-01 | water | ILM04 |
| Outfall 001RE1 | Outfall 001RE1 | IOD2043-01RE1 | water | ILM04 |
| Outfall 001RE2 | Outfall 001RE2 | IOD2043-01RE2 | water | ILM04 |
| Outfall 005 | Outfall 005 | IOD2054-01 | water | ILM04 |
| Outfall 009 | Outfall 009 | IOD2056-01 | water | ILM04 |
| Outfall 010 | Outfall 010 | IOD2058-01 | water | ILM04 |
| Outfall 018 | Outfall 018 | IOD2049-01 | water | ILM04 |

2. DATA VALIDATION FINDINGS

2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

2.1.1 Sample Preservation, Handling, and Transport

The samples in these SDGs were received at the laboratory within the temperature limits of 4°C ±2°C. No sample preservation, handling, or transport problems were noted, and no qualifications were necessary.

2.1.2 Chain of Custody

The COCs were signed and dated by field and laboratory personnel. The COCs accounted for the samples and analyses presented in these SDGs. The laboratory did not include the "RE1" and "RE2" client ID suffixes for the iron reanalyses on the Form I for sample Outfall 001. The reviewer appended the Form I with the correct suffixes to reflect this information. No sample qualifications were required.

2.1.3 Holding Times

The dates of collection recorded on the COCs and the dates of analyses recorded in the raw data, documented that the sample analyses were performed within the specified holding times of six months for the ICP and ICP/MS metals and 28-days for mercury. No qualifications were required.

2.2 ICP-MS TUNING

A precalibration routine must be completed prior to calibrating the instrument, which consists of analyzing a tuning solution to verify resolution, mass calibration, and thermal stability. The solution must be analyzed a minimum of five times and must contain isotopes representing all mass regions of interest. All %RSDs were less than 5%. The mass calibrations were within 0.1 amu of the true mass and the instrument resolutions were less than 0.75 amu at 5 percent peak height for all analytes in the tune solution. No site sample qualifications were required.

2.3 CALIBRATION

The ICV and CCV results showed acceptable recoveries, 90-110% for ICP and ICP-MS metals and 80-120% for mercury. The 0.2 µg/L ICP-MS reporting limit check standard was not recovered for antimony; however, as the antimony MDL was raised to 0.61 µg/L, no qualifications were required (see section 2.4). The remaining reporting limit check standards were recovered within the AMEC control limits of 70-130%. No sample qualifications were required.

2.4 BLANKS

Cadmium was reported in a bracketing ICP-MS CCB at $-0.028 \mu\text{g/L}$; therefore, cadmium detected in samples Outfall 009 and Outfall 010 was qualified as estimated, "J." Antimony was detected in a bracketing ICP-MS CCB at $0.61 \mu\text{g/L}$; however, as antimony was not detected in Outfall 009 or Outfall 010, no qualifications were required. The remaining method blank and CCB results were nondetects at the reporting limit.

There were antimony detects in both the bracketing ICP-MS CCBs at concentrations $\geq 3 \times \text{MDL}$. The antimony CCB detects indicated the laboratory could not detect antimony at the reported MDL. The reviewer, therefore, raised the MDLs for antimony to the highest level reported in the CCBs, $0.61 \mu\text{g/L}$. No further qualifications were required due to the method and calibration blank results.

2.5 ICP INTERFERENCE CHECK SAMPLE (ICS A/AB)

ICSA and ICSAB analyses were included in the raw data for the ICP-MS analyses. Results were not provided for spiked interferences sulfur, phosphorus, carbon, and chloride, and titanium. Antimony and lead were not spiked into the ICSAB solution. Potassium exceeded the calibration range of the instrument in both the ICSA/AB solutions associated with the Outfall 005, Outfall 009 and Outfall 010 analyses. Sodium exceeded the calibration range of the instrument in the ICSA solution for all associated analyses, and was recovered within the control limits in the ICSAB solution associated with the Outfall 005 analysis. Copper and cadmium were detected above the reporting limit in the ICSA. The validator reviewed the raw data for the site sample ICP-MS analyses for the level of reported interferences, Al, Ca, Fe, and Mg, and determined that the levels of reported interferences were not high enough to cause matrix effects. No assessment could be made with respect to possible interference from sulfur, phosphorus, carbon, titanium, and chloride.

ICSA and ICSAB analyses were included in the raw data for the ICP analyses and were analyzed the same day the samples. The recoveries were within the control limits of 80-120% and no qualifications were required.

2.6 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

The ICP LCS sample was identified as 5D29098-BS1 and the ICP-MS LCS sample was identified as 5D29095-BS1. The mercury LCS sample was identified as 5D29061-BS1. The LCS results on the summary forms and in the raw data were within the laboratory-established control limits of 85-115% for the ICP, ICP-MS, and mercury analyses. No qualifications were required.

2.7 LABORATORY DUPLICATES

MS/MSD analyses were performed in association with the ICP-MS analyses on sample Outfall 005 for lead. The RPD was within the control limits of $\leq 20\%$ and no qualifications were required.

2.8 MATRIX SPIKE

MS/MSD analyses were performed in association with the ICP/MS analyses on sample Outfall 005 for lead. The recoveries were within the control limits of 70-130% and no qualifications were required.

2.9 FURNACE ATOMIC ABSORPTION QC

Furnace atomic absorption was not utilized for the analyses of these samples; therefore, furnace atomic absorption QC is not applicable.

2.10 ICP/MS AND ICP SERIAL DILUTION

No serial dilution analyses were performed in association with the samples in these SDGs; therefore, no assessment was made with respect to this criterion.

2.11 INTERNAL STANDARDS PERFORMANCE

The ICP-MS internal standard recoveries for the site samples and associated QC sample analyses were within the 60-125% control limits and no qualifications were required.

2.12 SAMPLE RESULT VERIFICATION

A Level IV review was performed for the samples in these data packages. Calculations were verified, and the sample results reported on the Form Is were verified against the raw data. No transcription errors or calculation errors were noted. The laboratory reanalyzed sample Outfall 001 for iron. As the Outfall 001RE1 and Outfall 002RE2 results were similar to the original result, the Outfall 001RE1 and Outfall 002RE2 iron results were rejected, "R," in favor of the original iron analysis. Lead in Outfall 005, cadmium in Outfall 009 and Outfall 010, and mercury in Outfall 010 detected below the reporting limit were qualified as estimated, "J." No further qualifications were required.

2.13 FIELD QC SAMPLES

Field QC samples are evaluated, and if necessary, qualified based only on laboratory blanks. Any remaining detects are used to evaluate the associated samples.

2.13.1 Field Blanks and Equipment Rinsates

The samples in these SDGs had no associated field QC samples. No qualifications were required.

2.13.2 Field Duplicates

There were no field duplicate analyses performed in association with the site samples.



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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0643 FAX (480) 785-0851
 2720 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 598-3120 FAX (702) 598-3623

MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 001

Report Number: IOD2043

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers | |
|---|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|-----------|
| | | | | | | | | | REV QUAL | QUAL CODE |
| Sample ID: IOD2043-01 (DRAFT: Outfall 001 - Water) | | | | | | | | | | |
| Reporting Units: mg/l | | | | | | | | | | |
| Iron | EPA 200.7 | 5D29098 | 0.0088 | 0.040 | 0.36 | 1 | 04/29/05 | 05/02/05 | | |
| Sample ID: IOD2043-01RE1 (DRAFT: Outfall 001 Outfall 001RE1 - Water) | | | | | | | | | | |
| Reporting Units: mg/l | | | | | | | | | | |
| Iron | EPA 200.7 | 5E17078 | 0.0088 | 0.040 | 0.34 | 1 | 04/29/05 | 05/17/05 | R | D |
| Sample ID: IOD2043-01RE2 (DRAFT: Outfall 001 Outfall 001RE2 - Water) | | | | | | | | | | |
| Reporting Units: mg/l | | | | | | | | | | |
| Iron | EPA 200.7 | 5D29098 | 0.0088 | 0.040 | 0.36 | 1 | 04/29/05 | 05/17/05 | R | D |

J 06/06/05

AMEC VALIDATED

LEVEL IV

DRAFT REPORT
 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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 2525 E. Sun-69 Rd., #3, Las Vegas, NV 89120 (702) 798-3020 FAX (702) 798-0022

M'WH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Quarterly Outfall 018

Report Number: IOD2049

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|
| Sample ID: IOD2049-01 (DRAFT: Outfall 018 - Water) - cont. | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | |
| Copper | EPA 200.8 | 5D29095 | 0.49 | 2.0 | 3.7 | 1 | 04/29/05 | 05/03/05 | REV QUAL |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 1.9 | 1 | 04/29/05 | 05/03/05 | QUAL |
| Mercury | EPA 245.1 | 5D29061 | 0.063 | 0.20 | ND | 1 | 04/29/05 | 04/29/05 | u |

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 005

Report Number: IOD2054

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data | Qualifiers |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|------|------------|
| Sample ID: IOD2054-01 (DRAFT: Outfall 005 - Water) | | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | | |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 0.24 | 1 | 04/29/05 | 05/03/05 | J | J |

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LEVEL IV

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 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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 9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
 2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 009

Report Number: IOD2056

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Analyzed | Date Data | Qualifiers |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|---------------|-----------|------------|
| Sample ID: IOD2056-01 (DRAFT: Outfall 009 - Water) | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | |
| Antimony | EPA 200.8 | 5D29095 | 0.61 | 2.0 | ND | 1 | 04/29/05 | 05/03/05 | UJ |
| Cadmium | EPA 200.8 | 5D29095 | 0.15 | 1.0 | 0.024 | 1 | 04/29/05 | 05/03/05 | J |
| Copper | EPA 200.8 | 5D29095 | 0.49 | 2.0 | 3.2 | 1 | 04/29/05 | 05/03/05 | J |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 1.1 | 1 | 04/29/05 | 05/03/05 | J |
| Mercury | EPA 245.1 | 5D29061 | 0.063 | 0.20 | ND | 1 | 04/29/05 | 04/29/05 | U |

REV
 OUT
 CODE
 *S, \$
 B, DNC

Job 106/06/05

AMEC VALIDATED

LEVEL IV

DRAFT REPORT
 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 010

Report Number: IOD2058

Sampled: 04/28/05
 Received: 04/28/05

DRAFT: METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers | |
|--|-----------|---------|-------------------------|-----------------|---------------|-----------------|----------------|---------------|-----------------|-----------|
| | | | | | | | | | REV QUAL | QUAL CODE |
| Sample ID: IOD2058-01 (DRAFT: Outfall 010 - Water) | | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | | |
| Antimony | EPA 200.8 | 5D29095 | 0.18 0.61 | 2.0 | ND | 1 | 04/29/05 | 05/03/05 | UJ | B, \$ |
| Cadmium | EPA 200.8 | 5D29095 | 0.015 | 1.0 | 0.084 | 1 | 04/29/05 | 05/03/05 | J | B, DNC |
| Copper | EPA 200.8 | 5D29095 | 0.49 | 2.0 | 6.0 | 1 | 04/29/05 | 05/03/05 | | |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 3.0 | 1 | 04/29/05 | 05/03/05 | | |
| Mercury | EPA 245.1 | 5D29061 | 0.063 | 0.20 | 0.18 | 1 | 04/29/05 | 04/29/05 | J | DNQ |

4/26/05

AMEC VALIDATED
LEVEL IV

DRAFT REPORT
 DRAFT REPORT
 DATA SUBJECT TO CHANGE

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APPENDIX G - VOLUME 3 (Part 2 of 3)
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- 6 Outfall 006 – Del Mar Analytical Laboratory Reports, AMEC Data Validation Reports.
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- 8 Outfall 010 – Del Mar Analytical Laboratory Reports, AMEC Data Validation Reports.
- 9 Outfall 012 – Del Mar Analytical Laboratory Reports, AMEC Data Validation Reports.

APPENDIX G

Section 6

Outfall 006

Del Mar Analytical Laboratory Reports

AMEC Data Validation Reports



LABORATORY REPORT

Prepared For: MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project: Routine Outfall 006

Sampled: 04/28/05
Received: 04/28/05
Issued: 07/01/05 15:32

NELAP #01108CA California ELAP#1197 CSDLAC #10117

*The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain of Custody, 1 page, is included and is an integral part of this report.
This entire report was reviewed and approved for release.*

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID
IOD2055-01

CLIENT ID
Outfall 006

MATRIX
Water

Reviewed By:

Del Mar Analytical, Irvine
Michele Harper
Project Manager



Del Mar Analytical

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
 Received: 04/28/05

METALS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers |
|--|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|
| Sample ID: IOD2055-01 (Outfall 006 - Water) | | | | | | | | | |
| Reporting Units: ug/l | | | | | | | | | |
| Antimony | EPA 200.8 | 5D29095 | 0.18 | 2.0 | ND | 1 | 04/29/05 | 05/03/05 | |
| Cadmium | EPA 200.8 | 5D29095 | 0.015 | 1.0 | ND | 1 | 04/29/05 | 05/03/05 | |
| Copper | EPA 200.8 | 5D29095 | 0.49 | 2.0 | 2.0 | 1 | 04/29/05 | 05/03/05 | |
| Lead | EPA 200.8 | 5D29095 | 0.13 | 1.0 | 0.44 | 1 | 04/29/05 | 05/03/05 | J |
| Mercury | EPA 245.1 | 5D29061 | 0.063 | 0.20 | ND | 1 | 04/29/05 | 04/29/05 | |

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 Michele Harper
 Project Manager

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
 Received: 04/28/05

INORGANICS

| Analyte | Method | Batch | MDL Limit | Reporting Limit | Sample Result | Dilution Factor | Date Extracted | Date Analyzed | Data Qualifiers |
|---|-----------|---------|-----------|-----------------|---------------|-----------------|----------------|---------------|-----------------|
| Sample ID: IOD2055-01 (Outfall 006 - Water) - cont. | | | | | | | | | |
| Reporting Units: mg/l | | | | | | | | | |
| Chloride | EPA 300.0 | 5D28116 | 0.26 | 0.50 | 4.4 | 1 | 04/28/05 | 04/29/05 | |
| Nitrate/Nitrite-N | EPA 300.0 | 5D28116 | 0.072 | 0.26 | 1.9 | 1 | 04/28/05 | 04/29/05 | |
| Oil & Grease | EPA 413.1 | 5E04036 | 0.94 | 5.0 | ND | 1 | 05/04/05 | 05/04/05 | |
| Sulfate | EPA 300.0 | 5D28116 | 0.18 | 0.50 | 5.3 | 1 | 04/28/05 | 04/29/05 | |
| Total Dissolved Solids | SM2540C | 5D29129 | 10 | 10 | 100 | 1 | 04/29/05 | 04/29/05 | |
| Total Suspended Solids | EPA 160.2 | 5E04071 | 10 | 10 | 17 | 1 | 05/04/05 | 05/04/05 | |

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 Michele Harper
 Project Manager

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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
Received: 04/28/05

SHORT HOLD TIME DETAIL REPORT

| Sample ID: Outfall 006 (IOD2055-01) - Water EPA 300.0 | Hold Time (in days) | Date/Time Sampled | Date/Time Received | Date/Time Extracted | Date/Time Analyzed |
|--|------------------------|----------------------|-----------------------|------------------------|-----------------------|
| | 2 | 04/28/2005 11:10 | 04/28/2005 18:15 | 04/28/2005 21:30 | 04/29/2005 02:29 |

Del Mar Analytical, Irvine
Michele Harper
Project Manager



MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 006
Report Number: IOD2055

Sampled: 04/28/05
Received: 04/28/05

METHOD BLANK/QC DATA

METALS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | RPD Limits | RPD | RPD Limit | Data Qualifiers |
|--|--------|-----------------|-------|-------|-------------|---------------|-----------|------------|-----|-----------|-----------------|
| Batch: 5D29061 Extracted: 04/29/05 | | | | | | | | | | | |
| Blank Analyzed: 04/29/2005 (5D29061-BLK1) | | | | | | | | | | | |
| Mercury | ND | 0.20 | 0.063 | ug/l | | | | | | | |
| LCS Analyzed: 04/29/2005 (5D29061-BS1) | | | | | | | | | | | |
| Mercury | 8.06 | 0.20 | 0.063 | ug/l | 8.00 | | 101 | 85-115 | | | |
| Matrix Spike Analyzed: 04/29/2005 (5D29061-MS1) Source: IOD2033-03 | | | | | | | | | | | |
| Mercury | 7.76 | 0.20 | 0.063 | ug/l | 8.00 | ND | 97 | 70-130 | | | |
| Matrix Spike Dup Analyzed: 04/29/2005 (5D29061-MSD1) Source: IOD2033-03 | | | | | | | | | | | |
| Mercury | 7.82 | 0.20 | 0.063 | ug/l | 8.00 | ND | 98 | 70-130 | 1 | 20 | |
| Batch: 5D29095 Extracted: 04/29/05 | | | | | | | | | | | |
| Blank Analyzed: 05/03/2005 (5D29095-BLK1) | | | | | | | | | | | |
| Antimony | ND | 2.0 | 0.18 | ug/l | | | | | | | |
| Cadmium | ND | 1.0 | 0.015 | ug/l | | | | | | | |
| Copper | ND | 2.0 | 0.49 | ug/l | | | | | | | |
| Lead | ND | 1.0 | 0.13 | ug/l | | | | | | | |
| LCS Analyzed: 05/03/2005 (5D29095-BS1) | | | | | | | | | | | |
| Antimony | 87.8 | 2.0 | 0.18 | ug/l | 80.0 | | 110 | 85-115 | | | |
| Cadmium | 87.8 | 1.0 | 0.015 | ug/l | 80.0 | | 110 | 85-115 | | | |
| Copper | 78.5 | 2.0 | 0.49 | ug/l | 80.0 | | 98 | 85-115 | | | |
| Lead | 81.9 | 1.0 | 0.13 | ug/l | 80.0 | | 102 | 85-115 | | | |
| Matrix Spike Analyzed: 05/03/2005 (5D29095-MS1) Source: IOD2054-01 | | | | | | | | | | | |
| Antimony | 98.9 | 2.0 | 0.18 | ug/l | 80.0 | 0.31 | 123 | 70-130 | | | |
| Cadmium | 86.7 | 1.0 | 0.015 | ug/l | 80.0 | 0.058 | 108 | 70-130 | | | |
| Copper | 79.4 | 2.0 | 0.49 | ug/l | 80.0 | 2.0 | 97 | 70-130 | | | |
| Lead | 80.9 | 1.0 | 0.13 | ug/l | 80.0 | 0.24 | 101 | 70-130 | | | |

Del Mar Analytical, Irvine
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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05

Received: 04/28/05

METHOD BLANK/QC DATA

METALS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Data Qualifiers |
|---|--------|-----------------|-------|-------|-------------|---------------------------|------|-------------|-----|-----------|-----------------|
| Batch: 5D29095 Extracted: 04/29/05 | | | | | | | | | | | |
| Matrix Spike Analyzed: 05/03/2005 (5D29095-MS2) | | | | | | Source: IOD2149-03 | | | | | |
| Antimony | 100 | 10 | 0.90 | ug/l | 80.0 | ND | 125 | 70-130 | | | |
| Cadmium | 76.0 | 5.0 | 0.075 | ug/l | 80.0 | 0.45 | 94 | 70-130 | | | |
| Copper | 90.1 | 10 | 2.4 | ug/l | 80.0 | 17 | 91 | 70-130 | | | |
| Lead | 73.5 | 5.0 | 0.65 | ug/l | 80.0 | 1.1 | 90 | 70-130 | | | |
| Matrix Spike Dup Analyzed: 05/03/2005 (5D29095-MSD1) | | | | | | Source: IOD2054-01 | | | | | |
| Antimony | 99.6 | 2.0 | 0.18 | ug/l | 80.0 | 0.31 | 124 | 70-130 | 1 | 20 | |
| Cadmium | 87.7 | 1.0 | 0.015 | ug/l | 80.0 | 0.058 | 110 | 70-130 | 1 | 20 | |
| Copper | 81.3 | 2.0 | 0.49 | ug/l | 80.0 | 2.0 | 99 | 70-130 | 2 | 20 | |
| Lead | 81.0 | 1.0 | 0.13 | ug/l | 80.0 | 0.24 | 101 | 70-130 | 0 | 20 | |

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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
 Received: 04/28/05

METHOD BLANK/QC DATA

INORGANICS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | RPD RPD | RPD Limit | Data Qualifiers |
|--|--------|-----------------|-------|-------|-------------|--------------------|-----------|---------|-----------|-----------------|
| Batch: 5D28116 Extracted: 04/28/05 | | | | | | | | | | |
| Blank Analyzed: 04/28/2005 (5D28116-BLK1) | | | | | | | | | | |
| Chloride | ND | 0.50 | 0.26 | mg/l | | | | | | |
| Nitrate/Nitrite-N | ND | 0.26 | 0.072 | mg/l | | | | | | |
| Sulfate | ND | 0.50 | 0.18 | mg/l | | | | | | |
| LCS Analyzed: 04/28/2005 (5D28116-BS1) | | | | | | | | | | |
| Chloride | 4.82 | 0.50 | 0.26 | mg/l | 5.00 | | 96 | 90-110 | | M-3 |
| Sulfate | 9.63 | 0.50 | 0.18 | mg/l | 10.0 | | 96 | 90-110 | | M-3 |
| Batch: 5D29129 Extracted: 04/29/05 | | | | | | | | | | |
| Blank Analyzed: 04/29/2005 (5D29129-BLK1) | | | | | | | | | | |
| Total Dissolved Solids | ND | 10 | 10 | mg/l | | | | | | |
| LCS Analyzed: 04/29/2005 (5D29129-BS1) | | | | | | | | | | |
| Total Dissolved Solids | 930 | 10 | 10 | mg/l | 1000 | | 93 | 90-110 | | |
| Duplicate Analyzed: 04/29/2005 (5D29129-DUP1) | | | | | | | | | | |
| Total Dissolved Solids | 334 | 10 | 10 | mg/l | | Source: IOD2033-01 | | | 7 | 10 |
| Batch: 5E04036 Extracted: 05/04/05 | | | | | | | | | | |
| Blank Analyzed: 05/04/2005 (5E04036-BLK1) | | | | | | | | | | |
| Oil & Grease | ND | 5.0 | 0.94 | mg/l | | | | | | |
| LCS Analyzed: 05/04/2005 (5E04036-BS1) | | | | | | | | | | |
| Oil & Grease | 18.5 | 5.0 | 0.94 | mg/l | 20.0 | | 92 | 65-120 | | M-NR1 |

Del Mar Analytical, Irvine
 Michele Harper
 Project Manager



| | | |
|--|---|---|
| MWH-Pasadena/Boeing 300 North Lake Avenue, Suite 1200 Pasadena, CA 91101 Attention: Bronwyn Kelly | Project ID: Routine Outfall 006 Report Number: IOD2055 | Sampled: 04/28/05 Received: 04/28/05 |
|--|---|---|

METHOD BLANK/QC DATA

INORGANICS

| Analyte | Result | Reporting Limit | MDL | Units | Spike Level | Source Result | %REC %REC | RPD Limits | RPD | RPD Limit | Data Qualifiers |
|--|--------|-----------------|------|-------|-------------|--------------------|-----------|------------|-----|-----------|-----------------|
| Batch: 5E04036 Extracted: 05/04/05 | | | | | | | | | | | |
| LCS Dup Analyzed: 05/04/2005 (5E04036-BSD1) | | | | | | | | | | | |
| Oil & Grease | 18.9 | 5.0 | 0.94 | mg/l | 20.0 | | 94 | 65-120 | 2 | 20 | |
| Batch: 5E04071 Extracted: 05/04/05 | | | | | | | | | | | |
| Blank Analyzed: 05/04/2005 (5E04071-BLK1) | | | | | | | | | | | |
| Total Suspended Solids | ND | 10 | 10 | mg/l | | | | | | | |
| LCS Analyzed: 05/04/2005 (5E04071-BS1) | | | | | | | | | | | |
| Total Suspended Solids | 1000 | 10 | 10 | mg/l | 1000 | | 100 | 85-115 | | | |
| Duplicate Analyzed: 05/04/2005 (5E04071-DUP1) | | | | | | | | | | | |
| Total Suspended Solids | ND | 10 | 10 | mg/l | | Source: IOD2054-01 | | | | 10 | |

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Michele Harper
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MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
Received: 04/28/05

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits appear in bold on this page.

| LabNumber | Analysis | Analyte | Units | Result | MRL | Compliance Limit |
|------------|----------------------|------------------------|-------|--------|------|------------------|
| IOD2055-01 | 413.1 Oil and Grease | Oil & Grease | mg/l | -1 | 5.0 | 15 |
| IOD2055-01 | Antimony-200.8 | Antimony | ug/l | 0 | 2.0 | 6.00 |
| IOD2055-01 | Cadmium-200.8 | Cadmium | ug/l | 0.0080 | 1.0 | 4.00 |
| IOD2055-01 | Chloride - 300.0 | Chloride | mg/l | 4.40 | 0.50 | 150 |
| IOD2055-01 | Copper-200.8 | Copper | ug/l | 2.00 | 2.0 | 14 |
| IOD2055-01 | Mercury - 245.1 | Mercury | ug/l | 0.040 | 0.20 | 0.20 |
| IOD2055-01 | Nitrogen, NO3+NO2 -N | Nitrate/Nitrite-N | mg/l | 1.90 | 0.26 | 10.00 |
| IOD2055-01 | Sulfate-300.0 | Sulfate | mg/l | 5.30 | 0.50 | 250 |
| IOD2055-01 | TDS - SM 2540C | Total Dissolved Solids | mg/l | 100 | 10 | 850 |

Del Mar Analytical, Irvine
Michele Harper
Project Manager

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IOD2055 <Page 9 of 11>



MWH-Pasadena/Boeing
300 North Lake Avenue, Suite 1200
Pasadena, CA 91101
Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
Received: 04/28/05

DATA QUALIFIERS AND DEFINITIONS

- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M-3** Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
- M-NR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
- ND** Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
- RPD** Relative Percent Difference



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MWH-Pasadena/Boeing
 300 North Lake Avenue, Suite 1200
 Pasadena, CA 91101
 Attention: Bronwyn Kelly

Project ID: Routine Outfall 006

Report Number: IOD2055

Sampled: 04/28/05
 Received: 04/28/05

Certification Summary

Del Mar Analytical, Irvine

| Method | Matrix | Nelac | California |
|-----------|--------|-------|------------|
| EPA 160.2 | Water | X | X |
| EPA 200.8 | Water | X | X |
| EPA 245.1 | Water | X | X |
| EPA 300.0 | Water | X | X |
| EPA 413.1 | Water | X | X |
| SM2540C | Water | X | X |

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

Subcontracted Laboratories

Alta Analytical California Cert #1640, Nevada Cert #CA-413

1104 Windfield Way - El Dorado Hills, CA 95762

Analysis Performed: 1613-Dioxin-HR
 Samples: IOD2055-01

Analysis Performed: EDD + Level 4
 Samples: IOD2055-01

Del Mar Analytical, Irvine
 Michele Harper
 Project Manager



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June 17, 2005

MWH- Pasadena / Boeing
300 North Lake Avenue, Suite 1200
Pasadena , CA 91101

Attention: Bronwyn Kelly

Project: Routine Outfall 006
Sampled: 04/28/05
Del Mar Analytical Number: IOD2055

Dear Ms. Kelly:

Alta Analytical Laboratories performed the EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans for the project referenced above. Please use the following cross-reference table when reviewing your results.

| MWH ID | Del Mar ID | Alta ID |
|-------------|------------|-----------|
| Outfall 006 | IOD2055-01 | 26114-001 |

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please do not hesitate to contact me at (949) 261-1022, extension 215.

Sincerely yours,

DEL MAR ANALYTICAL


Michele Harper
Project Manager

Enclosure



July 06, 2005

Alta Project I.D.: 26114

Ms. Michele Harper
Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614

Dear Ms. Harper,

Enclosed are the amended results for the one aqueous sample received at Alta Analytical Laboratory on April 30, 2005 under your Project Name "IOD2055". This sample was extracted and analyzed using EPA Method 1613 for tetra-through-octa chlorinated dioxins and furans. A standard turnaround time was provided for this work.

The original results were reported in ng/L.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix, which contains the chain-of-custody, a list of data qualifiers and abbreviations, Alta's current certifications, and copies of the raw data (if requested).

Alta Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-933-1640 or by email at mmaier@altalab.com. Thank you for choosing Alta as part of your analytical support team.

Sincerely,

Martha M. Maier
Director of HRMS Services



Alta Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. This report should not be reproduced except in full without the written approval of ALTA.



Alta Analytical Laboratory Inc.

1104 Windfield Way
El Dorado Hills, CA 95762
FAX (916) 673-0106
(916) 933-1640

Section I: Sample Inventory Report

Date Received: 4/30/2005

Alta Lab. ID

Client Sample ID

26114-001

IOD2055-01

SECTION II

| Method Blank | | EPA Method 1613 | | | | | |
|---|--------------|-----------------|-------------------|-------------------------|-----------|----------------------|------------|
| Matrix: | Aqueous | QC Batch No.: | 6789 | Lab Sample: | 0-MB001 | | |
| Sample Size: | 1.000 L | Date Extracted: | 17-May-05 | Date Analyzed DB-5: | 19-May-05 | | |
| | | | | Date Analyzed DB-225: | NA | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00000124 | | IS 13C-2,3,7,8-TCDD | 69.9 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00000166 | | 13C-1,2,3,7,8-PeCDD | 84.1 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00000186 | | 13C-1,2,3,4,7,8-HxCDD | 72.5 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00000179 | | 13C-1,2,3,6,7,8-HxCDD | 75.3 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00000186 | | 13C-1,2,3,4,6,7,8-HpCDD | 65.8 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00000303 | | 13C-OCDD | 58.4 | 17 - 157 | |
| OCDD | ND | 0.00000677 | | 13C-2,3,7,8-TCDF | 81.1 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00000924 | | 13C-1,2,3,7,8-PeCDF | 79.5 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00000226 | | 13C-2,3,4,7,8-PeCDF | 82.4 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00000193 | | 13C-1,2,3,4,7,8-HxCDF | 72.6 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.00000785 | | 13C-1,2,3,6,7,8-HxCDF | 75.4 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.00000731 | | 13C-2,3,4,6,7,8-HxCDF | 92.3 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.00000672 | | 13C-1,2,3,7,8,9-HxCDF | 68.4 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00000158 | | 13C-1,2,3,4,6,7,8-HpCDF | 63.5 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00000969 | | 13C-1,2,3,4,7,8,9-HpCDF | 52.9 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00000192 | | 13C-OCDF | 49.2 | 17 - 157 | |
| OCDF | ND | 0.00000476 | | CRS 37Cl-2,3,7,8-TCDD | 89.9 | 35 - 197 | |
| Totals | | | | | | | |
| Total TCDD | ND | 0.00000124 | | | | | |
| Total PeCDD | ND | 0.00000166 | | | | | |
| Total HxCDD | ND | 0.00000183 | | | | | |
| Total HpCDD | ND | 0.00000303 | | | | | |
| Total TCDF | ND | 0.00000924 | | | | | |
| Total PeCDF | ND | 0.00000209 | | | | | |
| Total HxCDF | ND | 0.00000872 | | | | | |
| Total HpCDF | ND | 0.00000132 | | | | | |
| Footnotes | | | | | | | |
| a. Sample specific estimated detection limit. | | | | | | | |
| b. Estimated maximum possible concentration. | | | | | | | |
| c. Method detection limit. | | | | | | | |
| d. Lower control limit - upper control limit. | | | | | | | |

Analyst: RAS

Approved By: William J. Luksemburg 05-Jul-2005 16:09

| OPR Results | | EPA Method 1613 | | | | |
|---------------------|-------------|-----------------|------------|------------------------------|-----------|----------|
| Matrix: | Aqueous | QC Batch No.: | 6789 | Lab Sample: | 0-OPR001 | |
| Sample Size: | 1.000 L | Date Extracted: | 17-May-05 | Date Analyzed DB-5: | 19-May-05 | |
| | | | | Date Analyzed DB-225: | NA | |
| Analyte | Spike Conc. | Conc. (ng/mL) | OPR Limits | Labeled Standard | %R | LCL-UCL |
| 2,3,7,8-TCDD | 10.0 | 10.3 | 6.7 - 15.8 | <u>IS</u> 13C-2,3,7,8-TCDD | 66.3 | 25 - 164 |
| 1,2,3,7,8-PeCDD | 50.0 | 51.8 | 35 - 71 | 13C-1,2,3,7,8-PeCDD | 82.1 | 25 - 181 |
| 1,2,3,4,7,8-HxCDD | 50.0 | 50.1 | 35 - 82 | 13C-1,2,3,4,7,8-HxCDD | 69.4 | 32 - 141 |
| 1,2,3,6,7,8-HxCDD | 50.0 | 52.2 | 38 - 67 | 13C-1,2,3,6,7,8-HxCDD | 74.5 | 28 - 130 |
| 1,2,3,7,8,9-HxCDD | 50.0 | 54.3 | 32 - 81 | 13C-1,2,3,4,6,7,8-HpCDD | 64.6 | 23 - 140 |
| 1,2,3,4,6,7,8-HpCDD | 50.0 | 49.7 | 35 - 70 | 13C-OCDD | 40.2 | 17 - 157 |
| OCDD | 100 | 99.1 | 78 - 144 | 13C-2,3,7,8-TCDF | 71.3 | 24 - 169 |
| 2,3,7,8-TCDF | 10.0 | 10.1 | 7.5 - 15.8 | 13C-1,2,3,7,8-PeCDF | 78.8 | 24 - 185 |
| 1,2,3,7,8-PeCDF | 50.0 | 49.0 | 40 - 67 | 13C-2,3,4,7,8-PeCDF | 85.0 | 21 - 178 |
| 2,3,4,7,8-PeCDF | 50.0 | 49.2 | 34 - 80 | 13C-1,2,3,4,7,8-HxCDF | 72.8 | 26 - 152 |
| 1,2,3,4,7,8-HxCDF | 50.0 | 48.2 | 36 - 67 | 13C-1,2,3,6,7,8-HxCDF | 78.4 | 26 - 123 |
| 1,2,3,6,7,8-HxCDF | 50.0 | 48.8 | 42 - 65 | 13C-2,3,4,6,7,8-HxCDF | 82.5 | 28 - 136 |
| 2,3,4,6,7,8-HxCDF | 50.0 | 48.4 | 35 - 78 | 13C-1,2,3,7,8,9-HxCDF | 69.8 | 29 - 147 |
| 1,2,3,7,8,9-HxCDF | 50.0 | 49.7 | 39 - 65 | 13C-1,2,3,4,6,7,8-HpCDF | 58.1 | 28 - 143 |
| 1,2,3,4,6,7,8-HpCDF | 50.0 | 49.7 | 41 - 61 | 13C-1,2,3,4,7,8,9-HpCDF | 45.9 | 26 - 138 |
| 1,2,3,4,7,8,9-HpCDF | 50.0 | 50.6 | 39 - 69 | 13C-OCDF | 36.3 | 17 - 157 |
| OCDF | 100 | 93.6 | 63 - 170 | <u>CRS</u> 37Cl-2,3,7,8-TCDD | 85.6 | 35 - 197 |

Analyst: RAS

Approved By: William J. Luksemburg 05-Jul-2005 16:09

| Sample ID: IOD2055-01 | | EPA Method 1613 | | | | | |
|---|----------------------------|-----------------|-------------------|-------------------------|-----------|----------------------|------------|
| Client Data | | Sample Data | | Laboratory Data | | | |
| Name: | Del Mar Analytical, Irvine | Matrix: | Aqueous | Lab Sample: | 26114-001 | | |
| Project: | IOD2055 | Sample Size: | 0.930 L | QC Batch No.: | 6789 | | |
| Date Collected: | 28-Apr-05 | | | Date Analyzed DB-5: | 19-May-05 | | |
| Time Collected: | 1110 | | | Date Analyzed DB-225: | NA | | |
| Analyte | Conc. (ug/L) | DL ^a | EMPC ^b | Labeled Standard | %R | LCL-UCL ^d | Qualifiers |
| 2,3,7,8-TCDD | ND | 0.00159 | | IS 13C-2,3,7,8-TCDD | 68.4 | 25 - 164 | |
| 1,2,3,7,8-PeCDD | ND | 0.00212 | | 13C-1,2,3,7,8-PeCDD | 74.2 | 25 - 181 | |
| 1,2,3,4,7,8-HxCDD | ND | 0.00247 | | 13C-1,2,3,4,7,8-HxCDD | 64.7 | 32 - 141 | |
| 1,2,3,6,7,8-HxCDD | ND | 0.00236 | | 13C-1,2,3,6,7,8-HxCDD | 68.7 | 28 - 130 | |
| 1,2,3,7,8,9-HxCDD | ND | 0.00246 | | 13C-1,2,3,4,6,7,8-HpCDD | 60.7 | 23 - 140 | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.00323 | | 13C-OCDD | 41.3 | 17 - 157 | |
| OCDD | 0.0294 | | | 13C-2,3,7,8-TCDF | 68.3 | 24 - 169 | |
| 2,3,7,8-TCDF | ND | 0.00144 | | 13C-1,2,3,7,8-PeCDF | 69.9 | 24 - 185 | |
| 1,2,3,7,8-PeCDF | ND | 0.00282 | | 13C-2,3,4,7,8-PeCDF | 73.1 | 21 - 178 | |
| 2,3,4,7,8-PeCDF | ND | 0.00224 | | 13C-1,2,3,4,7,8-HxCDF | 69.2 | 26 - 152 | |
| 1,2,3,4,7,8-HxCDF | ND | 0.000746 | | 13C-1,2,3,6,7,8-HxCDF | 70.4 | 26 - 123 | |
| 1,2,3,6,7,8-HxCDF | ND | 0.000691 | | 13C-2,3,4,6,7,8-HxCDF | 72.7 | 28 - 136 | |
| 2,3,4,6,7,8-HxCDF | ND | 0.000794 | | 13C-1,2,3,7,8,9-HxCDF | 62.8 | 29 - 147 | |
| 1,2,3,7,8,9-HxCDF | ND | 0.00142 | | 13C-1,2,3,4,6,7,8-HpCDF | 54.0 | 28 - 143 | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.00103 | | 13C-1,2,3,4,7,8,9-HpCDF | 49.5 | 26 - 138 | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.00205 | | 13C-OCDF | 39.5 | 17 - 157 | |
| OCDF | ND | 0.00715 | | CRS 37Cl-2,3,7,8-TCDD | 88.7 | 35 - 197 | |
| Totals | | | | | | | |
| Total TCDD | ND | 0.00159 | | | | | |
| Total PeCDD | ND | 0.00212 | | | | | |
| Total HxCDD | ND | 0.00243 | | | | | |
| Total HpCDD | ND | 0.00542 | | | | | |
| Total TCDF | ND | 0.00144 | | | | | |
| Total PeCDF | ND | 0.00251 | | | | | |
| Total HxCDF | ND | 0.000864 | | | | | |
| Total HpCDF | ND | 0.00143 | | | | | |
| Footnotes | | | | | | | |
| a. Sample specific estimated detection limit. | | | | | | | |
| b. Estimated maximum possible concentration. | | | | | | | |
| c. Method detection limit. | | | | | | | |
| d. Lower control limit - upper control limit. | | | | | | | |

Analyst: RAS

Approved By: William J. Luksemburg 05-Jul-2005 16:09

APPENDIX

DATA QUALIFIERS & ABBREVIATIONS

| | |
|--------------|---|
| B | This compound was also detected in the method blank. |
| D | The amount reported is the maximum possible concentration due to possible chlorinated diphenylether interference. |
| H | The signal-to-noise ratio is greater than 10:1. |
| I | Chemical Interference |
| J | The amount detected is below the Lower Calibration Limit of the instrument. |
| P | Homologue totals include any coplanar PCBs detected at concentrations less than the reporting limit. |
| * | See Cover Letter |
| Conc. | Concentration |
| DL | Sample-specific estimated detection limit |
| MDL | The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in the matrix tested. |
| EMPC | Estimated Maximum Possible Concentration |
| NA | Not applicable |
| RL | Reporting Limit – concentrations that correspond to low calibration point |
| ND | Not Detected |
| TEQ | Toxic Equivalency |

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

The control limits are “interim limits only” until in-house limits are utilized.