

## **WASTE CHARACTERIZATION: IN-SITU SOIL LOCATED AT AREA II ISRA OUTFALL 009 PLANNED EXCAVATION AP/STP-1C-1-EAST**

### **Introduction**

This report presents supporting detailed information for the July 29, 2010 in-situ characterization sampling of prospective soil wastes from planned SSFL Area II ISRA excavations in the vicinity of the former Area II incinerator.

### **Background**

In-situ characterization was performed for soil destined to be excavated from designated locations in SSFL Area II in accordance with the ISRA Workplan. A step-by-step approach was followed to accomplish characterization of the soil prior to excavation. The first step was to review available information regarding historical area usage and existing analytical data from past soil sampling in or near planned excavation sites. The objective was to identify all substances potentially impacting the soil in each planned excavation footprint to the degree that hazardous waste regulatory thresholds would be exceeded.

The next step was to develop and implement a random sampling plan for each of the planned excavation footprints. The collected soil samples were analyzed by a state certified laboratory and the results evaluated to determine whether any of the identified substances were present at concentrations requiring further investigation. In addition, the initial random sampling results were evaluated to determine the statistical adequacy of the data provided for waste characterization based on the guidelines presented in U.S. EPA SW-846. Soil was characterized non-hazardous when analyte concentrations among the samples exhibited a reasonably small variance and there was satisfactory margin between the mean of the samples and applicable regulatory thresholds. Otherwise, additional samples would be collected and subjected to analysis, or in lieu of further testing, the soil was summarily characterized as hazardous. Statistical analyses described in SW-846 are performed as necessary to determine minimum sample point requirements and the upper confidence levels of analytical results.

AP/STP-1C-1-East is part of a larger planned excavation footprint, AP/STP-1C-1. The footprint was subdivided into three (3) areas for sampling purposes: AP/STP-1C-1-East, AP/STP-1C-1-West, and AP/STP-1C-1-Main. This was necessary because the highly irregular shape of the original footprint suggested the possibility of a characteristically heterogeneous wastestream. To assure that randomly identified sample collection points did not cluster in any particular area to the exclusion of other areas, thereby potentially voiding the representativeness of the analytical results, the two significant protuberances from the main body of the planned excavation were addressed independently.

The review of historical information and existing analytical data relevant to planned excavation AP/STP-1C-1-East was based partly on the Group 2 RFI results. Evaluation of these data and other sources of relevant information, including recent sampling conducted specifically for ISRA, suggested that Regulated Metals (CAM17), Volatile Organic Compounds (VOC), Polychlorinated Biphenyls (PCB), and Petroleum Hydrocarbons should be addressed in the AP/STP-1C-1-East excavation footprint. A random sampling plan was developed for collection of five (5) samples from the planned excavation footprint, taking into account the relatively small area to be excavated. The samples were analyzed for CAM 17 metals, VOCs, PCBs, and Petroleum Hydrocarbons. All samples were collected, contained, and handled according to field practice requirements in SW-846.

## Results

Analytical results for the planned excavation area at AP/STP-1C-1-East are presented in Test America report ITG2665 issued on 8/6/10. Regulated Metals were below 10-Times their respective California Soluble Threshold Limit Concentration (STLC) threshold in three of the samples, but in the two remaining samples, elevated concentrations of Silver were detected at 160 parts per million (ppm) and 66 ppm. Also, in one of those samples, Barium was detected above its 10X STLC threshold at 1,200 ppm. Leachate tests, the California Waste Extraction Test (WET) and the RCRA Toxicity Characteristic Leaching Procedure (TCLP), were performed as required on the samples with elevated Silver and Barium. Both the TCLP and the WET resulted in Non-detections for the Silver. Only the WET was applicable to the Barium, yielding a detected concentration of 13 milligrams per liter (mg/L), which is well below the STLC hazardous waste limit of 100 mg/L.

No VOCs were detected, with the exception of one sample, which exhibited a Trichloroethylene (TCE) concentration of 0.00078 ppm. The detection was "J-flagged," meaning the concentration was so close to the detection capability of the laboratory test that the reported concentration was estimated and not reliably measured. The TCE was not detected in any of the other samples despite the satisfactorily low analytical Method Detection Limits (range 0.00049 ppm - 0.00050 ppm), no historical records have been found suggesting any kind of solvent related activities in the area, and the very low concentration detected in the sample is consistent with soil vapor migration or volatilization of a groundwater transported contaminant from an unknown source. For these reasons, the soils excavated from AP/STP-1C-1-East are not being characterized as "F-Listed" wastes.

No PCBs were detected in any of the samples and Petroleum Hydrocarbons were detected at very low levels, with a maximum concentration in the C10-C40 range of 23 ppm.

## Determination

According to analytical results and generator knowledge, the soil in the planned excavation footprint of SSFL Area II AP/STP-1C-1-East:

- Is Not a Listed Waste (analytical results and generator knowledge)
- Is Not ignitable (generator knowledge)
- Is Not corrosive (generator knowledge)
- Is Not reactive (generator knowledge)
- Is Not toxic (analytical results and generator knowledge)
  - Is Not Extremely or Acutely Hazardous Waste
  - Does not exceed any RCRA or Title 22 characteristic thresholds
  - Is Not subject to the Prop. 65 listing if it is applied to 22 CCR 66261.24(a)(7)
  - Is Not subject to Title 22 Appendix X list
  - Is Not known by experience or testing to pose a hazard to human health or environment because of its carcinogenicity, acute toxicity, chronic toxicity, bio-accumulative properties, or persistence in the environment.

**The soil in AP/STP-1C-1-East is NON-HAZARDOUS.**

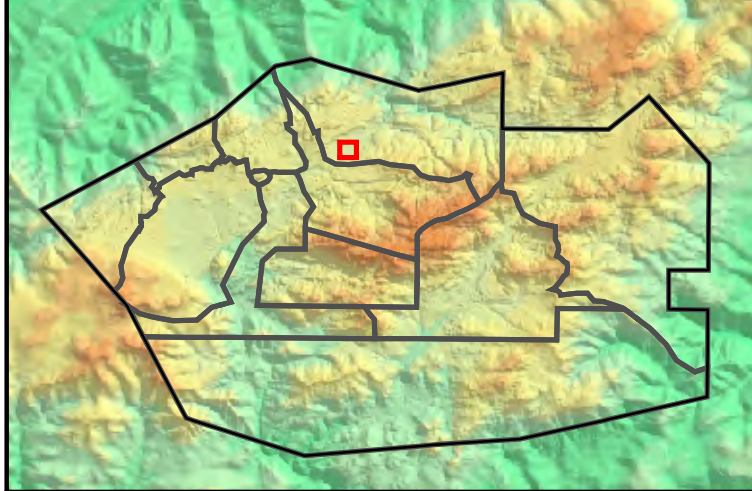
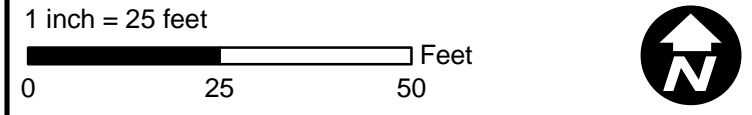
**Outfall 009**  
**Sample Locations for AP/STP - 1C,**  
**AP/STP - 1B, and AP/STP - 1D**

- Base Map Legend**
- Administrative Area Boundary
  - RFI Site Boundary
  - Report Group Boundary
  - NPDES Outfall
  - A/C Paving
  - Drainage
  - Non Jurisdictional Surface Water Pathway
  - Surface Water Divide
  - Elevation Contour

- Figure Legend**
- Waste Characterization Sample



Document: ISRA\_Plots\_Working\_AP-STP-1C\_SampleLocations.mxd Date: Sep 02, 2010



**INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009**

**WASTE CHARACTERIZATION SAMPLE RESULTS – AP/STP-1C-2 (East)  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY**

|                                  |       |        | Object Name:                                       |   |      | APWC0107            | APWC0108            | APWC0109            | APWC0110            |
|----------------------------------|-------|--------|--|---|------|---------------------|---------------------|---------------------|---------------------|
|                                  |       |        | Sample Name:                                       |   |      | APWC0107S001        | APWC0108S001        | APWC0109S001        | APWC0110S001        |
|                                  |       |        | Collection Date:                                   |   |      | 7/29/2010           | 7/29/2010           | 7/29/2010           | 7/29/2010           |
|                                  |       |        | Sample Depth (feet):                               |   |      | 0.0 - 0.3           | 0.0 - 0.5           | 0.0 - 0.5           | 0.0 - 0.5           |
| ANALYTE                          | UNITS | TTLIC  | WET<br>Leachate<br>Testing<br>Trigger <sup>a</sup> | TCLP<br>Leachate<br>Testing<br>Trigger <sup>b</sup> | STLC | RESULT <sup>c</sup> | RESULT <sup>c</sup> | RESULT <sup>c</sup> | RESULT <sup>c</sup> |
| <b>METALS</b>                    |       |        |  |   |      |                     |                     |                     |                     |
| Antimony                         | mg/kg | 500    | 150  | --  | --   | 1 J                 | 1.1 J               | 1.1 J               | 1.2 J               |
| Arsenic                          | mg/kg | 500    | 50   | 100   | --   | 3.5                 | 4.3                 | 3.7                 | 2.8                 |
| Barium                           | mg/kg | 10,000 | 1,000  | 2,000   | --   | 110                 | 100                 | 94                  | 160                 |
| Beryllium                        | mg/kg | 75     | 7.5  | --  | --   | 0.35 J              | 0.43 J              | 0.4 J               | 0.22 J              |
| Cadmium                          | mg/kg | 100    | 10   | 20  | --   | 0.3 J               | <0.20               | 2                   | 1.3                 |
| Chromium                         | mg/kg | 500    | 50   | 100   | --   | 15                  | 19                  | 16                  | 12                  |
| Cobalt                           | mg/kg | 8,000  | 800  | --  | --   | 5.1                 | 4.9                 | 4.7                 | 6.2                 |
| Copper                           | mg/kg | 2,500  | 250  | --  | --   | 14                  | 9.9                 | 26                  | 37                  |
| Lead                             | mg/kg | 1,000  | 50   | 100   | --   | 8.3                 | 4.4                 | 50                  | 15                  |
| Lead, WET                        | mg/L  | --     | --   | --  | 5    | --                  | --                  | 0.86                | --                  |
| Mercury                          | mg/kg | 20     | 2  | 4   | --   | <0.012              | <0.012              | 0.012 J             | 0.016 J             |
| Molybdenum                       | mg/kg | 3,500  | 3,500  | --  | --   | 0.56 J              | 0.7 J               | 0.54 J              | 0.48 J              |
| Nickel                           | mg/kg | 2,000  | 200  | --  | --   | 10                  | 12                  | 11                  | 9                   |
| Selenium                         | mg/kg | 100    | 10   | 20  | --   | <0.99               | <0.99               | <0.99               | <0.99               |
| Silver                           | mg/kg | 500    | 50   | 100   | --   | <0.79               | <0.79               | <0.79               | 2.7                 |
| Thallium                         | mg/kg | 700    | 70   | --  | --   | <0.79               | <0.79               | <0.79               | <0.79               |
| Vanadium                         | mg/kg | 2,400  | 240  | --  | --   | 31                  | 31                  | 28                  | 35                  |
| Zinc                             | mg/kg | 5,000  | 2,500  | --  | --   | 85                  | 53                  | 660                 | 220                 |
| <b>PCBs</b>                      |       |        |  |   |      |                     |                     |                     |                     |
| Aroclor 1016                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| Aroclor 1221                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| Aroclor 1232                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| Aroclor 1242                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| Aroclor 1248                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| Aroclor 1254                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| Aroclor 1260                     | ug/kg | 50,000 | 50,000   | --  | --   | <50 {<12}           | <50 {<12}           | <50 {<12}           | <50 {<12}           |
| <b>TPH</b>                       |       |        |  |   |      |                     |                     |                     |                     |
| Gasoline Range Organics (C6-C12) | mg/kg | --     | --   | --  | --   | <0.41 {<0.15}       | <0.39 {<0.15}       | <0.37 {<0.14}       | <0.45 {<0.17}       |
| EFH (C10 - C24)                  | mg/kg | --     | --   | --  | --   | <5 {<3.5}           | <5 {<3.5}           | <5 {<3.5}           | 4 J                 |
| EFH (C10 - C40)                  | mg/kg | --     | --   | --  | --   | 15                  | 7.8                 | 9.4                 | 16                  |
| EFH (C25 - C40)                  | mg/kg | --     | --   | --  | --   | 13                  | 4.7 J               | 7.3                 | 12                  |
| <b>VOCs</b>                      |       |        |  |   |      |                     |                     |                     |                     |
| 1,1,1,2-Tetrachloroethane        | ug/kg | --     | --   | --  | --   | <2 {<0.57}          | <2 {<0.56}          | <2 {<0.56}          | <2 {<0.57}          |
| 1,1,1-Trichloroethane            | ug/kg | --     | --   | --  | --   | <1 {<0.7}           | <0.99 {<0.69}       | <0.99 {<0.69}       | <0.99 {<0.69}       |
| 1,1,2,2-Tetrachloroethane        | ug/kg | --     | --   | --  | --   | <2 {<0.86}          | <2 {<0.85}          | <2 {<0.85}          | <2 {<0.85}          |

**INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009**

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THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY**

|                             |       |       |  |   |      | Object Name:         | APWC0107            | APWC0108            | APWC0109            | APWC0110     |
|-----------------------------|-------|-------|--|---|------|----------------------|---------------------|---------------------|---------------------|--------------|
|                             |       |       |  |   |      | Sample Name:         | APWC0107S001        | APWC0108S001        | APWC0109S001        | APWC0110S001 |
|                             |       |       |  |   |      | Collection Date:     | 7/29/2010           | 7/29/2010           | 7/29/2010           | 7/29/2010    |
|                             |       |       |  |   |      | Sample Depth (feet): | 0.0 - 0.3           | 0.0 - 0.5           | 0.0 - 0.5           | 0.0 - 0.5    |
| ANALYTE                     | UNITS | TTLIC | WET<br>Leachate<br>Testing<br>Trigger <sup>a</sup> | TCLP<br>Leachate<br>Testing<br>Trigger <sup>b</sup> | STLC | RESULT <sup>c</sup>  | RESULT <sup>c</sup> | RESULT <sup>c</sup> | RESULT <sup>c</sup> |              |
| 1,1,2-Trichloroethane       | ug/kg | --    | --   | --  | --   | <1 {<0.87}           | <0.99 {<0.86}       | <0.99 {<0.86}       | <0.99 {<0.86}       |              |
| 1,1-Dichloroethane          | ug/kg | --    | --   | --  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| 1,1-Dichloroethene          | ug/kg | --    | --   | 14,000  | --   | <2 {<0.6}            | <2 {<0.59}          | <2 {<0.59}          | <2 {<0.6}           |              |
| 1,1-Dichloropropene         | ug/kg | --    | --   | --  | --   | <1 {<0.4}            | <0.99 {<0.4}        | <0.99 {<0.39}       | <0.99 {<0.4}        |              |
| 1,2,3-Trichlorobenzene      | ug/kg | --    | --   | --  | --   | <2 {<1}              | <2 {<0.99}          | <2 {<0.99}          | <2 {<0.99}          |              |
| 1,2,3-Trichloropropane      | ug/kg | --    | --   | --  | --   | <2 {<1}              | <2 {<0.99}          | <2 {<0.99}          | <2 {<0.99}          |              |
| 1,2,4-Trichlorobenzene      | ug/kg | --    | --   | --  | --   | <2 {<1}              | <2 {<0.99}          | <2 {<0.99}          | <2 {<0.99}          |              |
| 1,2,4-Trimethylbenzene      | ug/kg | --    | --   | --  | --   | <1 {<0.78}           | <0.99 {<0.77}       | <0.99 {<0.77}       | <0.99 {<0.77}       |              |
| 1,2-Dibromo-3-chloropropane | ug/kg | --    | --   | --  | --   | <10 {<1.5}           | <9.9 {<1.5}         | <9.9 {<1.5}         | <9.9 {<1.5}         |              |
| 1,2-Dibromoethane (EDB)     | ug/kg | --    | --   | --  | --   | <1 {<0.8}            | <0.99 {<0.79}       | <0.99 {<0.79}       | <0.99 {<0.79}       |              |
| 1,2-Dichlorobenzene         | ug/kg | --    | --   | --  | --   | <1 {<0.95}           | <0.99 {<0.94}       | <0.99 {<0.94}       | <0.99 {<0.94}       |              |
| 1,2-Dichloroethane          | ug/kg | --    | --   | 10,000  | --   | <1 {<0.8}            | <0.99 {<0.79}       | <0.99 {<0.79}       | <0.99 {<0.79}       |              |
| 1,2-Dichloropropane         | ug/kg | --    | --   | --  | --   | <1 {<0.8}            | <0.99 {<0.79}       | <0.99 {<0.79}       | <0.99 {<0.79}       |              |
| 1,3,5-Trimethylbenzene      | ug/kg | --    | --   | --  | --   | <1 {<0.63}           | <0.99 {<0.62}       | <0.99 {<0.62}       | <0.99 {<0.62}       |              |
| 1,3-Dichlorobenzene         | ug/kg | --    | --   | --  | --   | <1 {<0.84}           | <0.99 {<0.83}       | <0.99 {<0.83}       | <0.99 {<0.83}       |              |
| 1,3-Dichloropropane         | ug/kg | --    | --   | --  | --   | <1 {<0.63}           | <0.99 {<0.62}       | <0.99 {<0.62}       | <0.99 {<0.62}       |              |
| 1,4-Dichlorobenzene         | ug/kg | --    | --   | --  | --   | <1 {<0.94}           | <0.99 {<0.93}       | <0.99 {<0.93}       | <0.99 {<0.93}       |              |
| 2,2-Dichloropropane         | ug/kg | --    | --   | --  | --   | <1 {<0.6}            | <0.99 {<0.59}       | <0.99 {<0.59}       | <0.99 {<0.6}        |              |
| 2-Butanone (MEK)            | ug/kg | --    | --   | 4,000,000   | --   | <10 {<6}             | <9.9 {<5.9}         | <9.9 {<5.9}         | <9.9 {<6}           |              |
| 2-Chlorotoluene             | ug/kg | --    | --   | --  | --   | <2 {<0.87}           | <2 {<0.86}          | <2 {<0.86}          | <2 {<0.86}          |              |
| 2-Hexanone                  | ug/kg | --    | --   | --  | --   | <10 {<9.1}           | <9.9 {<9}           | <9.9 {<9}           | <9.9 {<9}           |              |
| 4-Chlorotoluene             | ug/kg | --    | --   | --  | --   | <2 {<0.74}           | <2 {<0.73}          | <2 {<0.73}          | <2 {<0.73}          |              |
| 4-Methyl-2-pentanone (MIBK) | ug/kg | --    | --   | --  | --   | <5 {<4.5}            | <4.9 {<4.4}         | <4.9 {<4.4}         | <5 {<4.5}           |              |
| Acetone                     | ug/kg | --    | --   | --  | --   | 22                   | <9.9 {<7.9}         | 20                  | 10                  |              |
| Benzene                     | ug/kg | --    | --   | 10,000  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| Bromobenzene                | ug/kg | --    | --   | --  | --   | <2 {<0.84}           | <2 {<0.83}          | <2 {<0.83}          | <2 {<0.83}          |              |
| Bromochloromethane          | ug/kg | --    | --   | --  | --   | <2 {<0.9}            | <2 {<0.89}          | <2 {<0.89}          | <2 {<0.89}          |              |
| Bromodichloromethane        | ug/kg | --    | --   | --  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| Bromoform                   | ug/kg | --    | --   | --  | --   | <2 {<0.8}            | <2 {<0.79}          | <2 {<0.79}          | <2 {<0.79}          |              |
| Bromomethane                | ug/kg | --    | --   | --  | --   | <2 {<0.92}           | <2 {<0.91}          | <2 {<0.91}          | <2 {<0.91}          |              |
| Carbon Disulfide            | ug/kg | --    | --   | --  | --   | <5 {<0.97}           | <4.9 {<0.96}        | <4.9 {<0.96}        | <5 {<0.96}          |              |
| Carbon tetrachloride        | ug/kg | --    | --   | 10,000  | --   | <2 {<0.5}            | <2 {<0.49}          | <2 {<0.49}          | <2 {<0.5}           |              |
| Chlorobenzene               | ug/kg | --    | --   | 2,000,000   | --   | <1 {<0.52}           | <0.99 {<0.51}       | <0.99 {<0.51}       | <0.99 {<0.52}       |              |
| Chloroethane                | ug/kg | --    | --   | --  | --   | <2 {<1.5}            | <2 {<1.5}           | <2 {<1.5}           | <2 {<1.5}           |              |
| Chloroform                  | ug/kg | --    | --   | 120,000   | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| Chloromethane               | ug/kg | --    | --   | --  | --   | <2 {<1}              | <2 {<0.99}          | <2 {<0.99}          | <2 {<0.99}          |              |

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|                                |       |           |  |   |      | Object Name:         | APWC0107            | APWC0108            | APWC0109            | APWC0110     |
|--------------------------------|-------|-----------|--|---|------|----------------------|---------------------|---------------------|---------------------|--------------|
|                                |       |           |  |   |      | Sample Name:         | APWC0107S001        | APWC0108S001        | APWC0109S001        | APWC0110S001 |
|                                |       |           |  |   |      | Collection Date:     | 7/29/2010           | 7/29/2010           | 7/29/2010           | 7/29/2010    |
|                                |       |           |  |   |      | Sample Depth (feet): | 0.0 - 0.3           | 0.0 - 0.5           | 0.0 - 0.5           | 0.0 - 0.5    |
| ANALYTE                        | UNITS | TTLIC     | WET<br>Leachate<br>Testing<br>Trigger <sup>a</sup> | TCLP<br>Leachate<br>Testing<br>Trigger <sup>b</sup> | STLC | RESULT <sup>c</sup>  | RESULT <sup>c</sup> | RESULT <sup>c</sup> | RESULT <sup>c</sup> |              |
| cis-1,2-Dichloroethene         | ug/kg | --        | --   | --  | --   | <1 {<0.83}           | <0.99 {<0.82}       | <0.99 {<0.82}       | <0.99 {<0.82}       |              |
| cis-1,3-Dichloropropene        | ug/kg | --        | --   | --  | --   | <1 {<0.44}           | <0.99 {<0.43}       | <0.99 {<0.43}       | <0.99 {<0.44}       |              |
| Dibromochloromethane           | ug/kg | --        | --   | --  | --   | <1 {<0.7}            | <0.99 {<0.69}       | <0.99 {<0.69}       | <0.99 {<0.69}       |              |
| Dibromomethane                 | ug/kg | --        | --   | --  | --   | <1 {<0.9}            | <0.99 {<0.89}       | <0.99 {<0.89}       | <0.99 {<0.89}       |              |
| Dichlorodifluoromethane        | ug/kg | --        | --   | --  | --   | <5 {<1.5}            | <4.9 {<1.5}         | <4.9 {<1.5}         | <5 {<1.5}           |              |
| Ethylbenzene                   | ug/kg | --        | --   | --  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| Hexachlorobutadiene            | ug/kg | --        | --   | --  | --   | <2 {<0.8}            | <2 {<0.79}          | <2 {<0.79}          | <2 {<0.79}          |              |
| Isopropylbenzene               | ug/kg | --        | --   | --  | --   | <1 {<0.54}           | <0.99 {<0.53}       | <0.99 {<0.53}       | <0.99 {<0.54}       |              |
| m,p-Xylenes                    | ug/kg | --        | --   | --  | --   | <2 {<0.8}            | <2 {<0.79}          | <2 {<0.79}          | <2 {<0.79}          |              |
| Methylene chloride             | ug/kg | --        | --   | --  | --   | <10 {<6.5}           | <9.9 {<6.4}         | <9.9 {<6.4}         | <9.9 {<6.4}         |              |
| Methyl-tert-butyl Ether (MTBE) | ug/kg | --        | --   | --  | --   | <2 {<1}              | <2 {<0.99}          | <2 {<0.99}          | <2 {<0.99}          |              |
| n-Butylbenzene                 | ug/kg | --        | --   | --  | --   | <2 {<0.72}           | <2 {<0.71}          | <2 {<0.71}          | <2 {<0.71}          |              |
| n-Propylbenzene                | ug/kg | --        | --   | --  | --   | <1 {<0.61}           | <0.99 {<0.6}        | <0.99 {<0.6}        | <0.99 {<0.61}       |              |
| Naphthalene                    | ug/kg | --        | --   | --  | --   | <2 {<1.1}            | <2 {<1.1}           | <2 {<1.1}           | <2 {<1.1}           |              |
| o-Xylene                       | ug/kg | --        | --   | --  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| p-Isopropyltoluene             | ug/kg | --        | --   | --  | --   | <1 {<0.72}           | <0.99 {<0.71}       | <0.99 {<0.71}       | <0.99 {<0.71}       |              |
| sec-Butylbenzene               | ug/kg | --        | --   | --  | --   | <2 {<0.67}           | <2 {<0.66}          | <2 {<0.66}          | <2 {<0.66}          |              |
| Styrene                        | ug/kg | --        | --   | --  | --   | <1 {<0.58}           | <0.99 {<0.57}       | <0.99 {<0.57}       | <0.99 {<0.58}       |              |
| tert-Butylbenzene              | ug/kg | --        | --   | --  | --   | <2 {<0.62}           | <2 {<0.61}          | <2 {<0.61}          | <2 {<0.62}          |              |
| Tetrachloroethene              | ug/kg | --        | --   | 14,000  | --   | <1 {<0.49}           | <0.99 {<0.48}       | <0.99 {<0.48}       | <0.99 {<0.49}       |              |
| Toluene                        | ug/kg | --        | --   | --  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| trans-1,2-Dichloroethene       | ug/kg | --        | --   | --  | --   | <1 {<0.7}            | <0.99 {<0.69}       | <0.99 {<0.69}       | <0.99 {<0.69}       |              |
| trans-1,3-Dichloropropene      | ug/kg | --        | --   | --  | --   | <1 {<0.61}           | <0.99 {<0.6}        | <0.99 {<0.6}        | <0.99 {<0.61}       |              |
| Trichloroethene                | ug/kg | 2,040,000 | 2,040,000  | 10,000  | --   | <1 {<0.5}            | <0.99 {<0.49}       | <0.99 {<0.49}       | <0.99 {<0.5}        |              |
| Trichlorofluoromethane         | ug/kg | --        | --   | --  | --   | <2 {<0.54}           | <2 {<0.53}          | <2 {<0.53}          | <2 {<0.54}          |              |
| Vinyl acetate                  | ug/kg | --        | --   | --  | --   | <5 {<2.5}            | <4.9 {<2.5}         | <4.9 {<2.5}         | <5 {<2.5}           |              |
| Vinyl chloride                 | ug/kg | --        | --   | 4,000   | --   | <2 {<0.91}           | <2 {<0.9}           | <2 {<0.9}           | <2 {<0.9}           |              |
| <b>RADIONUCLIDES</b>           | --    | --        | --   | --  | --   | R                    | R                   | R                   | R                   |              |

**INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009**

**WASTE CHARACTERIZATION SAMPLE RESULTS – AP/STP  
THE BOEING COMPANY  
SANTA SUSANA FIELD LABORATORY**

**Notes:**

--" - not analyzed / not applicable

<5 - Analyte not detected at or above the stated method detection limit (metals) or analyte not detected at or above the stated reporting limit (organics)

{<1} - Analyte not detected at or above the stated method detection limit (organics)

<sup>a</sup> - WET Leachate Testing Trigger = STLC limit \* 10

<sup>b</sup> - TCLP Leachate Testing Trigger = TCLP limit \* 20

<sup>c</sup> Waste characterization sample results not validated

B - Analyte was detected in the associated method blank

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.

M1 - The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

µg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

mg/L - milligrams per liter

R - Radiological analysis includes gamma spectroscopy (Na-22, K-40, Mn-54, Co-60, Cs-134, Cs-137, Eu-152, Eu-154, Th-228, Th-232, U-235, U-238 and Am-241), strontium-90, and tritium. Boeing will be preparing a document that provides the radiological results and statistical analysis of these waste characterization samples.

R-3 - The RPD exceeded the acceptance limit due to sample matrix effects