Clean-up activities currently being performed to address any potential actions on the site and downstream sediments.

Legend:
- 340 Outfall
- Lead, Cadmium, Copper, and Mercury
- Sample Location
- Site Area
- Stream
- Pond
- Groundwater
- Other
- Road and Paving
- Site Area
- Perimeter
- Subsurface Contaminant
- Contaminant
- Background
- Contaminant
- Groundwater
- Seepage
- Spill
- AGC
- NFE
- SEER

Table:
<table>
<thead>
<tr>
<th>Parameter</th>
<th>2005 Background Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>1 µg/L</td>
</tr>
<tr>
<td>Lead</td>
<td>34 µg/L</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.98 µg/L</td>
</tr>
<tr>
<td>Diocine (TDD + TEQ)</td>
<td>0.67 µg/g</td>
</tr>
</tbody>
</table>

Diocine represents the sum of 17 dioxin/trans congener ratios adjusted for toxicity normalized to 2,3,7,8-TCDD TEQ.

Surface Soil = 0 to 2 feet bgs

Figure 1-7
Western Outfall 009
Preliminary IRRA Evaluation Areas
Santa Susana Field Laboratory
Surface Area = 97 yd²
Depth = 2 feet (0.67 yds)
Volume = 85 yd³

NOTE:
Soil concentrations of parameters exceeding the 009 Outfall NPDES Discharge Permit Limits were compared to their respective background levels:

Dioxin*: 0.00087 ug/kg

*Dioxin values represent the TCDD TEG (ND=0) 2005 WHO

Figure 1
A2LF-1 Proposed Excavation Area
Interim Source Removal Action
Western Outfall 009
NASA, Santa Susana Field Laboratory
NOTE:
Soil concentrations of parameters exceeding the 009 Outfall NPDES Discharge Permit Limits were compared to their respective background levels. Lead: 34 mg/kg

A2LF-3 Proposed Excavation Area Interim Source Removal Action Western Outfall 009 NASA, Santa Susana Field Laboratory

Surface Area = 78 yd²
Depth = 2 feet (0.67 yds)
Volume = 68 yd³

Legend
- Detect, Exceedance Lead
- Non Detect Lead
- Rock Outcrop
- Road and Paving
- Stream
- Contour
- Potential Excavation Area
- Preliminary Evaluation Area
- Pavement/Gravel Area
- Site Areas
- SSFL Boundary

Figure 2
1-SEPT-2009
Drawn By:
Alberta Cooley
D. Scott Stevens
NASA, Santa Susana Field Laboratory
# A2LF-1 Analytical Results

* Draft *

## Results in μg/kg

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Date</th>
<th>Sample Depth</th>
<th>Refusal?</th>
<th>Soil Type</th>
<th>Dioxin*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2BS0040S001</td>
<td>2-Jan-07</td>
<td>0.1 - 0.5'</td>
<td>Unknown</td>
<td>Unknown</td>
<td>0.00024</td>
</tr>
<tr>
<td>A2BS1074S001</td>
<td>2-Apr-09</td>
<td>0 - 0.5'</td>
<td>Yes - 1.5'. Target TD was 5'.</td>
<td>Silty Sand (SM)</td>
<td>0.00065</td>
</tr>
<tr>
<td>A2BS1075S001</td>
<td>2-Apr-09</td>
<td>0 - 0.5'</td>
<td>Yes - 0.5'. Target TD was 5'.</td>
<td>Silty Sand (SM)</td>
<td>0.00029</td>
</tr>
<tr>
<td>A2BS1076S001</td>
<td>2-Apr-09</td>
<td>0 - 0.5'</td>
<td>Yes - 1.3'. Target TD was 5'. Poorly Graded Sand with Silt (SP-SM)</td>
<td>0.00053</td>
<td></td>
</tr>
<tr>
<td>A2BS1077S001</td>
<td>2-Apr-09</td>
<td>2 - 2.5'</td>
<td>Yes - 2.5'. Target TD was 6'.</td>
<td>Silty Sand (SM)</td>
<td>0.0080</td>
</tr>
<tr>
<td>A2BS1093S001</td>
<td>16-Jun-09</td>
<td>0 - 0.5'</td>
<td>No</td>
<td>Silty Sand (SM)</td>
<td>0.00032</td>
</tr>
<tr>
<td>ENBS0061S001</td>
<td>16-Sep-08</td>
<td>0.25 - 0.75'</td>
<td>Unknown</td>
<td>Unknown</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

### 2005 Background Comparison Concentration

0.00087

**Notes:**
- Sample exceeds the 2005 background comparison concentration (MWH, 2005)
- * - dioxin values represent the TCDD toxicity equivalent (TEQ) (ND=0) 2005 World Health Organization (WHO)
### A2LF-3 Analytical Results

#### Results in mg/kg

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Date</th>
<th>Sample Depth</th>
<th>Refusal?</th>
<th>Soil Type</th>
<th>Cadmium</th>
<th>Copper</th>
<th>Lead</th>
<th>Mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2BS1088S001</td>
<td>3-Apr-09</td>
<td>3 - 3.5'</td>
<td>Yes</td>
<td>Sand (SP)</td>
<td>--</td>
<td>--</td>
<td>10.2</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1089S001</td>
<td>2-Apr-09</td>
<td>0 - 0.25'</td>
<td>Yes</td>
<td>Gravelly Sand (GP)</td>
<td>--</td>
<td>--</td>
<td>8.44</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1090S001</td>
<td>2-Apr-09</td>
<td>0 - 0.25'</td>
<td>No</td>
<td>Silty Sand (SM)</td>
<td>--</td>
<td>--</td>
<td>67.6</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1090S002</td>
<td>2-Apr-09</td>
<td>4.75 - 5'</td>
<td>No</td>
<td>Clayey Sand (SC)</td>
<td>--</td>
<td>--</td>
<td>12.1</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1091S001</td>
<td>3-Apr-09</td>
<td>0 - 0.25'</td>
<td>No</td>
<td>Silty Sand (SM)</td>
<td>--</td>
<td>--</td>
<td>33.3</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1091S002</td>
<td>3-Apr-09</td>
<td>4.75 - 5'</td>
<td>No</td>
<td>Silty Sand (SM)</td>
<td>--</td>
<td>--</td>
<td>241</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1092S001</td>
<td>2-Apr-09</td>
<td>0 - 0.25'</td>
<td>No</td>
<td>Silty Sand (SM)</td>
<td>--</td>
<td>--</td>
<td>11.7</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1092S002</td>
<td>2-Apr-09</td>
<td>4.75 - 5'</td>
<td>No</td>
<td>Sand (SP)</td>
<td>--</td>
<td>--</td>
<td>2.9</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1095S001</td>
<td>16-Jun-09</td>
<td>0 - 0.5'</td>
<td>No</td>
<td>Sandy Silt (ML)</td>
<td>--</td>
<td>--</td>
<td>338</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1095S002</td>
<td>16-Jun-09</td>
<td>4.5 - 5'</td>
<td>No</td>
<td>Poorly Graded Sand (SP)</td>
<td>--</td>
<td>--</td>
<td>25.6</td>
<td>--</td>
</tr>
<tr>
<td>A2BS1096S001</td>
<td>16-Jun-09</td>
<td>0 - 0.25'</td>
<td>No</td>
<td>Sandy Silt (ML)</td>
<td>--</td>
<td>--</td>
<td>16</td>
<td>--</td>
</tr>
<tr>
<td>ENBS0020S001</td>
<td>20-Aug-08</td>
<td>0.5 - 0.9'</td>
<td>Unknown</td>
<td>Unknown</td>
<td>0.25</td>
<td>8.7</td>
<td>44.8</td>
<td>0.013</td>
</tr>
<tr>
<td>ENBS0020S001SP</td>
<td>20-Aug-08</td>
<td>0.5 - 0.9'</td>
<td>Unknown</td>
<td>Unknown</td>
<td>0.27</td>
<td>11</td>
<td>140</td>
<td>0.023 J</td>
</tr>
</tbody>
</table>

#### 2005 Background Comparison Concentration

|    | 1 | 29 | 34 | 0.09 |

### Notes:
- Sample Exceeds the 2005 Background Comparison Concentration (MWH, 2005)
- J - Result is estimated
- mg/kg - milligrams per kilogram
- "..." - not analyzed
### Supplemental Table 4-5
#### Outfall 009 ISRA Area Summary
##### A2LF-1 and A2LF-3 ISRA Areas

<table>
<thead>
<tr>
<th>Site Name</th>
<th>ISRA COCs Exceeding Background Comparison Concentrations&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Surface Area, Approximate Depth of Exceedance, and Ex Situ Volume Estimate&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Remedial Action</th>
<th>ISRA Soil Remediation Goals</th>
</tr>
</thead>
</table>
| A2LF-1    | Dioxins                                         | SA = 97 yd<sup>2</sup>  
Depth = 2 feet (0.67 yds)  
Volume = 85 cy | Excavation | Dioxins = 3 pg/g |
| A2LF-3    | Lead                                           | SA = 78 yd<sup>2</sup>  
Depth = 2 feet (0.67 yds)  
Volume = 68 cy | Excavation | Lead = 34 mg/kg |

**General Notes:**

1. Background comparison concentration (MWH, 2005):
   - Lead: 34 mg/kg
   - Dioxin: 0.87 pg/g

2. Ex-Situ Volume Assumes 30% fluff of ex situ soils

---

*Supplemental Table 4-5.xls*
Legend

Proposed Excavation Area
Potential Excavation Area
Building
NPDES Outfall
Surface Water Drainage

SE-1 Six Fence
SE-9 Straw Bale Barrier
Gravel Berm Bags
TC-1 Sheeted Construction Entrance

Notes:
- If stockpiling occurs at or near excavation areas, place a tarp or gravel berm downgradient and
upgradient of stockpiles to minimize run-off and run-on respectively.
- Compact soil at end of excavation activities.

ISRA Constituents of Concern
Exceeding Background
Contamination Concentration in Soil

Area ID
ELV-1C
ELV-1D
Eluther, Cadmium, Copper, Lead
Mercury, Zink
A2LF-3
A2LF-3

Use NS-8, NS-9, NS-10, WM-3, WM-4, WM-5, WM-6, WM-7, WM-8 when working in or around excavation areas

Outfall 009 Stockpile Staging Area

Use WW-3 and WE-1 for Any Stockpiles

MWH
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

BMP PLAN
ELV-1 AREA
(CUTFALL 009)
MUPP SWPP-2