

WASTE CHARACTERIZATION: IN-SITU SOIL LOCATED AT ISRA AREA II PLANNED EXCAVATION ELV-1D DRAINAGE

Introduction

This report presents supporting detailed information for the July 28, 2009 in-situ characterization of prospective soil wastes from planned ISRA excavations in SSFL Area II.

Background

In-situ characterization of soil destined to be excavated from designated locations in SSFL Area II in accordance with the ISRA Workplan was performed. 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 the applicable SSFL Area II locations. The objective was to identify all substances that could have an impact on the determination of whether soil in each planned excavation footprint was hazardous or not.

The next step was to develop a random sampling plan for each of the planned excavation footprints to determine whether any of the identified substances are present at concentrations that require further investigation. An evaluation of the results of the initial random sampling was performed to determine whether the data was adequate for waste characterization based on the exhibited variance of any detected analytes and the relative difference between detected concentrations and regulatory thresholds. The 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 were collected and subjected to analysis or the soil was characterized as hazardous.

The review of historical information and existing analytical data relevant to planned excavation in the general ELV-1D area was based largely on the Group 2 RFI results. Evaluation of these data and other sources of relevant information suggested that soils here should be managed as two distinct areas, the former pond and the drainage.

For the ELV-1D DRAINAGE, Volatile Organic Compounds (VOC), Regulated metals, and Semi-Volatile Organic Compounds (SVOC) were identified as potential impacts that should be addressed in the excavation footprint. A random sampling plan was developed for collection of eight (8) samples from the planned excavation footprint. The samples were analyzed for VOCs, CAM 17 metals, and SVOCs. Additionally, a 96-hour Acute Aquatic Toxicity LC50 (Fish Bioassay) was run on two samples. All samples were collected, contained, and handled according to field practice requirements in SW-846.

Results

Analytical results for the ELV-1D DRAINAGE planned excavation area are presented in TestAmerica report ISG2199 issued on 8/13/09. Only trace concentrations of SVOCs were detected, with all analytes below 1 mg/kg individually and collectively. Trace concentrations of VOCs were also detected. Acetone was detected a maximum concentration of 0.016 mg/kg, Toluene at a maximum concentration of 0.011 mg/kg, and Benzene was detected in one sample at 0.00084 mg/kg. No other VOCs were detected.

Low concentrations of some regulated metals were detected. Chromium was detected at concentrations ranging from 16 mg/kg to 28 mg/kg. Lead was detected at concentrations ranging from 4.3 mg/kg to 23 mg/kg. These and all other detected regulated metals were well below regulatory thresholds.

Determination

According to analytical results and generator knowledge, the soil in the planned excavation footprint of SSFL Area II ELV-1D DRAINAGE:

Is Not a Listed Waste (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 thresholds

Is Not subject to the Prop. 65 listing

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 ELV-1D DRAINAGE is NON-HAZARDOUS.

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

**ELV-1D (DRAINAGE) WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076
Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001
Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009
Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2

ANALYTE	UNITS	TTLIC	WET Leachate Testing Trigger^a	TCLP Leachate Testing Trigger^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT
METALS												
Antimony	mg/kg	500	150	--	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic	mg/kg	500	50	100	20	4.2 B	3.9	4 B	4	3.8 B	4.5	3.7 B
Barium	mg/kg	10,000	1,000	2,000	57	52	69	84	76	72	75	66
Beryllium	mg/kg	75	7.5	--	0.44 J	0.55	0.48 J	0.49 J	0.48 J	0.47 J	0.54	0.54
Cadmium	mg/kg	100	10	20	<0.5	<0.5	0.33 J	<0.5	0.29 J	<0.5	<0.5	<0.5
Chromium	mg/kg	500	50	100	16	26	23	21	21	18	28	20
Cobalt	mg/kg	8,000	800	--	4.1	7.7	5	5.1	5.3	4.8	5.4	5.3
Copper	mg/kg	2,500	250	--	7.3	21	11	8.1	10	8.4	10	10
Lead	mg/kg	1,000	50	100	19	4.3	5.5	6.6	15	6.3	23	17
Mercury	mg/kg	20	2	4	<0.033	0.0073 J	0.019 J	<0.033	0.015 J	0.012 J	0.017 J	0.0087 J
Molybdenum	mg/kg	3,500	3,500	--	<2	0.46 J	<2	<2	0.32 J	0.2 J	<2	<2
Nickel	mg/kg	2,000	200	--	10	17	14	15	14	12	14	13
Selenium	mg/kg	100	10	20	<2	<2	1.6 J	<2	<2	<2	<2	<2
Silver	mg/kg	500	50	100	<1	<1	<1	<1	<1	<1	<1	<1
Thallium	mg/kg	700	70	--	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium	mg/kg	2,400	240	--	25	35	33	33	32	28	34	33
Zinc	mg/kg	5,000	2,500	--	53	40	63	46	82	44	66	57
SVOCs												
1,2,4-Trichlorobenzene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,2-Dichlorobenzene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,2-Diphenylhydrazine/Azobenzene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,4-Dichlorobenzene	µg/kg	--	--	150,000	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2,4,5-Trichlorophenol	µg/kg	--	--	8,000,000	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2,4,6-Trichlorophenol	µg/kg	--	--	40,000	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2,4-Dichlorophenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2,4-Dimethylphenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2,4-Dinitrophenol	µg/kg	--	--	--	<1.3	<0.66	<0.66	<0.66 M2	<0.66	<0.66	<0.66	<0.66
2,4-Dinitrotoluene	µg/kg	--	--	2,600	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2,6-Dinitrotoluene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2-Chloronaphthalene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2-Chlorophenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2-Methylnaphthalene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
2-Methylphenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

**ELV-1D (DRAINAGE) WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

			<table border="1"> <tr> <td>Object Name:</td> <td>ISWC0069</td> <td>ISWC0070</td> <td>ISWC0071</td> <td>ISWC0072</td> <td>ISWC0073</td> <td>ISWC0074</td> <td>ISWC0075</td> <td>ISWC0076</td> </tr> <tr> <td>Sample Name:</td> <td>ISWC0069S001</td> <td>ISWC0070S001</td> <td>ISWC0071S001</td> <td>ISWC0072S001</td> <td>ISWC0073S001</td> <td>ISWC0074S001</td> <td>ISWC0075S001</td> <td>ISWC0076S001</td> </tr> <tr> <td>Collection Date:</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> </tr> <tr> <td>Sample Depth (feet):</td> <td>1.1 - 1.6</td> <td>0.0 - 0.5</td> <td>0.2 - 0.7</td> <td>0.3 - 0.8</td> <td>0.0 - 0.4</td> <td>1.0 - 1.5</td> <td>1.5 - 2.0</td> <td>0.0 - 0.2</td> </tr> </table>										Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076	Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001	Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2
Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076																																								
Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001																																								
Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009																																								
Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2																																								
ANALYTE	UNITS	TTLC	WET Leachate Testing Trigger^a	TCLP Leachate Testing Trigger^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT																																				
2-Nitroaniline	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
2-Nitrophenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
3,3'-Dichlorobenzidine	µg/kg	--	--	--	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83																																				
3-Nitroaniline	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
4,6-Dinitro-2-methylphenol	µg/kg	--	--	--	<0.84	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42																																				
4-Bromophenyl phenyl ether	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
4-Chloro-3-methylphenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
4-Chloroaniline	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
4-Chlorophenyl phenyl ether	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
4-Methylphenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
4-Nitroaniline	µg/kg	--	--	--	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83																																				
4-Nitrophenol	µg/kg	--	--	--	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83																																				
Acenaphthene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Acenaphthylene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Aniline	µg/kg	--	--	--	<0.84	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42																																				
Anthracene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Benzidine	µg/kg	--	--	--	<1.3	<0.66	<0.66	<0.66 M2	<0.66	<0.66	<0.66	<0.66																																				
Benzo(a)anthracene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Benzo(a)pyrene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Benzo(b)fluoranthene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Benzo(g,h,i)perylene	µg/kg	--	--	--	<0.66	<0.33	<0.33	0.21 J	<0.33	<0.33	<0.33	<0.33																																				
Benzo(k)fluoranthene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Benzoic acid	µg/kg	--	--	--	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83																																				
Benzyl alcohol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Bis(2-chloroethoxy)methane	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Bis(2-chloroethyl)ether	µg/kg	--	--	--	<0.34	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17																																				
Bis(2-chloroisopropyl)ether	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Bis(2-ethylhexyl)phthalate	µg/kg	--	--	--	0.21 J	<0.33	0.19 J	<0.33	0.23 J	<0.33	0.22 J	<0.33																																				
Butyl benzyl phthalate	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33 M1	<0.33	<0.33	<0.33	<0.33																																				
Chrysene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Dibenz(a,h)anthracene	µg/kg	--	--	--	<0.84	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42																																				
Dibenzofuran	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Diethyl phthalate	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Dimethyl phthalate	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Di-n-butyl phthalate	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

**ELV-1D (DRAINAGE) WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

			<table border="1"> <tr> <td>Object Name:</td> <td>ISWC0069</td> <td>ISWC0070</td> <td>ISWC0071</td> <td>ISWC0072</td> <td>ISWC0073</td> <td>ISWC0074</td> <td>ISWC0075</td> <td>ISWC0076</td> </tr> <tr> <td>Sample Name:</td> <td>ISWC0069S001</td> <td>ISWC0070S001</td> <td>ISWC0071S001</td> <td>ISWC0072S001</td> <td>ISWC0073S001</td> <td>ISWC0074S001</td> <td>ISWC0075S001</td> <td>ISWC0076S001</td> </tr> <tr> <td>Collection Date:</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> </tr> <tr> <td>Sample Depth (feet):</td> <td>1.1 - 1.6</td> <td>0.0 - 0.5</td> <td>0.2 - 0.7</td> <td>0.3 - 0.8</td> <td>0.0 - 0.4</td> <td>1.0 - 1.5</td> <td>1.5 - 2.0</td> <td>0.0 - 0.2</td> </tr> </table>										Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076	Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001	Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2
Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076																																								
Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001																																								
Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009																																								
Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2																																								
ANALYTE	UNITS	TTLIC	WET Leachate Testing Trigger^a	TCLP Leachate Testing Trigger^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT																																				
Di-n-octyl phthalate	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Fluoranthene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Fluorene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Hexachlorobenzene	µg/kg	--	--	2,600	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Hexachlorobutadiene	µg/kg	--	--	10,000	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Hexachlorocyclopentadiene	µg/kg	--	--	--	<1.7	<0.83 C-2	<0.83	<0.83	<0.83 C-2	<0.83 C-2	<0.83 C-2	<0.83 C-2																																				
Hexachloroethane	µg/kg	--	--	60,000	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Indeno(1,2,3-cd)pyrene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Isophorone	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Naphthalene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Nitrobenzene	µg/kg	--	--	40,000	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
N-Nitrosodimethylamine	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
N-Nitroso-di-n-propylamine	µg/kg	--	--	--	<0.5	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25																																				
N-Nitrosodiphenylamine	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Pentachlorophenol	µg/kg	17,000	17,000	2,000,000	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83																																				
Phenanthrene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Phenol	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
Pyrene	µg/kg	--	--	--	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33																																				
VOCs																																																
1,1,1,2-Tetrachloroethane	µg/kg	--	--	--	<0.002 l	<0.0025	<0.0022	<0.0023	<0.0025 l	<0.0024	<0.0021	<0.0036																																				
1,1,1-Trichloroethane	µg/kg	--	--	--	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
1,1,2,2-Tetrachloroethane	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
1,1,2-Trichloroethane	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
1,1-Dichloroethane	µg/kg	--	--	--	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
1,1-Dichloroethene	µg/kg	--	--	14,000	<0.002 l	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
1,1-Dichloropropene	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
1,2,3-Trichlorobenzene	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
1,2,3-Trichloropropane	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
1,2,4-Trichlorobenzene	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
1,2,4-Trimethylbenzene	µg/kg	--	--	--	<0.001 l	<0.0013 l	<0.0011 l	<0.0012	<0.0013 l	<0.0012	<0.0011 l	<0.0018 l																																				
1,2-Dibromo-3-chloropropane	µg/kg	--	--	--	<0.01 l	<0.013 l	<0.011 l	<0.012	<0.013 l	<0.012	<0.011 l	<0.018 l																																				
1,2-Dibromoethane (EDB)	µg/kg	--	--	--	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013 l	<0.0012	<0.0011	<0.0018																																				
1,2-Dichlorobenzene	µg/kg	--	--	--	<0.001 l	<0.0013 l	<0.0011 l	<0.0012	<0.0013 l	<0.0012	<0.0011 l	<0.0018 l																																				
1,2-Dichloroethane	µg/kg	--	--	10,000	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
1,2-Dichloropropane	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

**ELV-1D (DRAINAGE) WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

			<table border="1"> <tr> <td>Object Name:</td> <td>ISWC0069</td> <td>ISWC0070</td> <td>ISWC0071</td> <td>ISWC0072</td> <td>ISWC0073</td> <td>ISWC0074</td> <td>ISWC0075</td> <td>ISWC0076</td> </tr> <tr> <td>Sample Name:</td> <td>ISWC0069S001</td> <td>ISWC0070S001</td> <td>ISWC0071S001</td> <td>ISWC0072S001</td> <td>ISWC0073S001</td> <td>ISWC0074S001</td> <td>ISWC0075S001</td> <td>ISWC0076S001</td> </tr> <tr> <td>Collection Date:</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> </tr> <tr> <td>Sample Depth (feet):</td> <td>1.1 - 1.6</td> <td>0.0 - 0.5</td> <td>0.2 - 0.7</td> <td>0.3 - 0.8</td> <td>0.0 - 0.4</td> <td>1.0 - 1.5</td> <td>1.5 - 2.0</td> <td>0.0 - 0.2</td> </tr> </table>										Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076	Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001	Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2
Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076																																								
Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001																																								
Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009																																								
Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2																																								
ANALYTE	UNITS	TTLC	WET Leachate Testing Trigger^a	TCLP Leachate Testing Trigger^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT																																				
1,3,5-Trimethylbenzene	µg/kg	--	--	--	<0.001 I	<0.0013 I	<0.0011 I	<0.0012	<0.0013 I	<0.0012	<0.0011 I	<0.0018 I																																				
1,3-Dichlorobenzene	µg/kg	--	--	--	<0.001 I	<0.0013 I	<0.0011 I	<0.0012	<0.0013 I	<0.0012	<0.0011 I	<0.0018 I																																				
1,3-Dichloropropane	µg/kg	--	--	--	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013 I	<0.0012	<0.0011	<0.0018																																				
1,4-Dichlorobenzene	µg/kg	--	--	--	<0.001 I	<0.0013 I	<0.0011 I	<0.0012	<0.0013 I	<0.0012	<0.0011 I	<0.0018 I																																				
2,2-Dichloropropane	µg/kg	--	--	--	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
2-Butanone (MEK)	µg/kg	--	--	4,000,000	<0.01 I	<0.013	<0.011	<0.012	<0.013	<0.012	<0.011	<0.018																																				
2-Chlorotoluene	µg/kg	--	--	--	<0.002 I	<0.0025 I	<0.0022 I	<0.0023	<0.0025 I	<0.0024	<0.0021 I	<0.0036 I																																				
2-Hexanone	µg/kg	--	--	--	<0.01 I	<0.013	<0.011	<0.012	<0.013 I	<0.012	<0.011	<0.018																																				
4-Chlorotoluene	µg/kg	--	--	--	<0.002 I	<0.0025 I	<0.0022 I	<0.0023	<0.0025 I	<0.0024	<0.0021 I	<0.0036 I																																				
4-Methyl-2-pentanone (MIBK)	µg/kg	--	--	--	<0.0051	<0.0063	<0.0054	<0.0058	<0.0063	<0.006	<0.0053	<0.009																																				
Acetone	µg/kg	--	--	--	0.0099 I, J	<0.013	<0.011	<0.012	0.016	<0.012	<0.011	0.015 J																																				
Benzene	µg/kg	--	--	10,000	<0.001	0.00084 J	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Bromobenzene	µg/kg	--	--	--	<0.002 I	<0.0025 I	<0.0022 I	<0.0023	<0.0025 I	<0.0024	<0.0021 I	<0.0036 I																																				
Bromochloromethane	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Bromodichloromethane	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Bromoform	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025 I	<0.0024	<0.0021	<0.0036																																				
Bromomethane	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Carbon Disulfide	µg/kg	--	--	--	<0.0051 I	<0.0063	<0.0054	<0.0058	<0.0063	<0.006	<0.0053	<0.009																																				
Carbon tetrachloride	µg/kg	--	--	10,000	<0.002	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Chlorobenzene	µg/kg	--	--	2,000,000	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013 I	<0.0012	<0.0011	<0.0018																																				
Chloroethane	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Chloroform	µg/kg	--	--	120,000	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Chloromethane	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
cis-1,2-Dichloroethene	µg/kg	--	--	--	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
cis-1,3-Dichloropropene	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Dibromochloromethane	µg/kg	--	--	--	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013 I	<0.0012	<0.0011	<0.0018																																				
Dibromomethane	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Dichlorodifluoromethane	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Di-isopropyl Ether (DIPE)	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Ethyl tert-Butyl Ether (ETBE)	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Ethylbenzene	µg/kg	--	--	--	<0.001 I	<0.0013	<0.0011	<0.0012	<0.0013 I	<0.0012	<0.0011	<0.0018																																				
Hexachlorobutadiene	µg/kg	--	--	--	<0.002 I	<0.0025 I	<0.0022 I	<0.0023	<0.0025 I	<0.0024	<0.0021 I	<0.0036 I																																				
Isopropylbenzene	µg/kg	--	--	--	<0.001 I	<0.0013 I	<0.0011 I	<0.0012	<0.0013 I	<0.0012	<0.0011 I	<0.0018 I																																				
m,p-Xylenes	µg/kg	--	--	--	<0.002 I	<0.0025	<0.0022	<0.0023	<0.0025 I	<0.0024	<0.0021	<0.0036																																				
Methylene chloride	µg/kg	--	--	--	<0.01 I	<0.013	<0.011	<0.012	<0.013	<0.012	<0.011	<0.018																																				

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

**ELV-1D (DRAINAGE) WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

			<table border="1"> <tr> <td>Object Name:</td> <td>ISWC0069</td> <td>ISWC0070</td> <td>ISWC0071</td> <td>ISWC0072</td> <td>ISWC0073</td> <td>ISWC0074</td> <td>ISWC0075</td> <td>ISWC0076</td> </tr> <tr> <td>Sample Name:</td> <td>ISWC0069S001</td> <td>ISWC0070S001</td> <td>ISWC0071S001</td> <td>ISWC0072S001</td> <td>ISWC0073S001</td> <td>ISWC0074S001</td> <td>ISWC0075S001</td> <td>ISWC0076S001</td> </tr> <tr> <td>Collection Date:</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> <td>7/28/2009</td> </tr> <tr> <td>Sample Depth (feet):</td> <td>1.1 - 1.6</td> <td>0.0 - 0.5</td> <td>0.2 - 0.7</td> <td>0.3 - 0.8</td> <td>0.0 - 0.4</td> <td>1.0 - 1.5</td> <td>1.5 - 2.0</td> <td>0.0 - 0.2</td> </tr> </table>										Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076	Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001	Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2
Object Name:	ISWC0069	ISWC0070	ISWC0071	ISWC0072	ISWC0073	ISWC0074	ISWC0075	ISWC0076																																								
Sample Name:	ISWC0069S001	ISWC0070S001	ISWC0071S001	ISWC0072S001	ISWC0073S001	ISWC0074S001	ISWC0075S001	ISWC0076S001																																								
Collection Date:	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009	7/28/2009																																								
Sample Depth (feet):	1.1 - 1.6	0.0 - 0.5	0.2 - 0.7	0.3 - 0.8	0.0 - 0.4	1.0 - 1.5	1.5 - 2.0	0.0 - 0.2																																								
ANALYTE	UNITS	TTLC	WET Leachate Testing Trigger^a	TCLP Leachate Testing Trigger^b	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT	RESULT																																				
Methyl-tert-butyl Ether (MTBE)	µg/kg	--	--	--	<0.002 l	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Naphthalene	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
n-Butylbenzene	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
n-Propylbenzene	µg/kg	--	--	--	<0.001 l	<0.0013 l	<0.0011 l	<0.0012	<0.0013 l	<0.0012	<0.0011 l	<0.0018 l																																				
o-Xylene	µg/kg	--	--	--	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013 l	<0.0012	<0.0011	<0.0018																																				
p-Isopropyltoluene	µg/kg	--	--	--	<0.001 l	<0.0013 l	<0.0011 l	<0.0012	<0.0013 l	<0.0012	<0.0011 l	<0.0018 l																																				
sec-Butylbenzene	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
Styrene	µg/kg	--	--	--	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013 l	<0.0012	<0.0011	<0.0018																																				
tert-Amyl Methyl Ether (TAME)	µg/kg	--	--	--	<0.002 l	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
tert-Butanol (TBA)	µg/kg	--	--	--	<0.051	<0.063	<0.054	<0.058	<0.063	<0.06	<0.053	<0.09																																				
tert-Butylbenzene	µg/kg	--	--	--	<0.002 l	<0.0025 l	<0.0022 l	<0.0023	<0.0025 l	<0.0024	<0.0021 l	<0.0036 l																																				
Tetrachloroethene	µg/kg	--	--	14,000	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013 l	<0.0012	<0.0011	<0.0018																																				
Toluene	µg/kg	--	--	--	0.003	0.011	<0.0011	0.0006 J	<0.0013	<0.0012	<0.0011	<0.0018																																				
trans-1,2-Dichloroethene	µg/kg	--	--	--	<0.001 l	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
trans-1,3-Dichloropropene	µg/kg	--	--	--	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Trichloroethene	µg/kg	2,040,000	2,040,000	10,000	<0.001	<0.0013	<0.0011	<0.0012	<0.0013	<0.0012	<0.0011	<0.0018																																				
Trichlorofluoromethane	µg/kg	--	--	--	<0.002 l	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Vinyl acetate	µg/kg	--	--	--	<0.0051 l	<0.0063	<0.0054	<0.0058	<0.0063	<0.006	<0.0053	<0.009																																				
Vinyl chloride	µg/kg	--	--	4,000	<0.002 l	<0.0025	<0.0022	<0.0023	<0.0025	<0.0024	<0.0021	<0.0036																																				
Xylenes, Total	µg/kg	--	--	--	<0.0041 l	<0.0051	<0.0043	<0.0046	<0.0051 l	<0.0048	<0.0043	<0.0072																																				
RADIONUCLIDES	--	--	--	--	R	R	R	R	R	R	R	R																																				

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

ELV WASTE CHARACTERIZATION SUMMARY NOTES THE BOEING COMPANY SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not analyzed / not applicable

¹ - WET Leachate Testing Trigger = STLC limit * 10

² - TCLP Leachate Testing Trigger = TCLP limit * 20

Grey highlighted cells indicate concentration meets or exceeds STLC.

A-01 - Sample result might be biased high due to coelution of Aroclors 1254 and 1260. The data was reprocessed in a different way as the calibration (3 peaks were used in the confirmation column).

A-01a - Sample result might be biased high due to coelution of Aroclors 1254 and 1260. The data was reprocessed in a different way as the calibration (4 peaks were used in the primary column).

A-01b - Sample result might be biased high due to coelution of Aroclors 1254 and 1260. The data was reprocessed in a different way as the calibration (4 peaks were used in the primary and 3 peaks were used in the confirmation column).

A-01c - Sample result might be biased high due to coelution of Aroclors 1254 and 1260. The data was reprocessed in a different way as the calibration (4 peaks were used in the primary column).

B - Analyte was detected in the associated Method Blank.

C - Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted

C-2 - Calibration Verification recovery was below the method control limit for this analyte, however the average % difference for all analytes met method criteria.

I - Internal Standard recovery was outside of method limits. Matrix interference was confirmed.

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.

L - Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.

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

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

**ELV WASTE CHARACTERIZATION SUMMARY NOTES
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

M2 - The MS and/or MSD were below 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 has prepared a document dated August 17, 2009 that provides the radiological results and statistical analysis of the Outfall 008 waste characterization samples. Based on the results, the document certifies the soil represented by these waste characterization samples to be "radiologically" acceptable for shipment to Class 1, 2, and/or 3 disposal facilities. The analysis and data interpretation complies with procedures approved by the California Department of Public Health.

R-1 - The relative percent difference (RPD) between the primary and confirmatory analysis exceeded 40%. Per method 8000B, the higher value was reported

R-G - Samples were recollected for gamma spectroscopy only (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)