

WASTE CHARACTERIZATION: IN-SITU SOIL LOCATED AT ISRA HAPPY VALLEY PLANNED EXCAVATION HVS-2A

Introduction

This report presents supporting detailed information for the July 16, 2009 in-situ characterization of prospective soil wastes from planned ISRA excavations at Happy Valley.

Background

In-situ characterization of soil destined to be excavated from Happy Valley 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 Happy Valley (HV). 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 HVS-2A was based largely on the Group 1A RFI results. Somewhat elevated historical concentrations indicated the need to investigate regulated metals more thoroughly. To obtain additional data relating to regulated metals, a random sampling plan was developed for collection of eight (8) samples from the planned excavation footprint. However, changes were made in the excavation plans after sampling was already completed. An additional 7 samples were collected to account for the new excavation footprint. The samples were all analyzed for CAM 17 metals. All samples were collected, contained, and handled according to field practice requirements in SW-846.

Results

Analytical results for the various samples collected in the original and revised HVS-2A planned excavation areas are presented in TestAmerica reports ISG0118, issued on 7/15/09; ISG2471, issued on 8/6/09; and ISG2313, issued on 8/11/09. All regulated metals were well below applicable regulatory thresholds. Chromium and Lead were most significant from a regulatory standpoint, but both were well below their respective RCRA and California hazardous waste thresholds. Chromium ranged from 9.7 ppm to 23 ppm compared to the TCLP 20 X threshold of 100 ppm, the CA TTLC threshold of 2,500 ppm, and the CA STLC 10 X threshold of 50 ppm. Similarly, Lead ranged 3.4 ppm to 33 ppm compared to the TCLP 20 X threshold of 100 ppm, the CA TTLC threshold of 1,000 ppm, and the CA STLC 10 X threshold of 50 ppm. Low concentrations of Selenium, a California only regulated metal, were also detected, ranging from

ND to 1.5 ppm. The CA TTLC for Selenium is 100 ppm and the CA STLC 10 X threshold is 10 ppm. All other regulated metals are well below regulatory thresholds.

Determination

According to analytical results and generator knowledge, the soil in the planned excavation footprint of Happy Valley HVS-2A:

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 HVS-2A is NON-HAZARDOUS.

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

**HVS-2A WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY**

			<table border="1"> <tr> <td>Object Name:</td> <td>ISWC0028</td> <td>ISWC0077</td> <td>ISWC0078</td> <td>ISWC0079</td> <td>ISWC0080</td> <td>ISWC0081</td> <td>ISWC0082</td> <td>ISWC0083</td> </tr> <tr> <td>Sample Name:</td> <td>ISWC0028S001</td> <td>ISWC0077S001</td> <td>ISWC0078S001</td> <td>ISWC0079S001</td> <td>ISWC0080S001</td> <td>ISWC0081S001</td> <td>ISWC0082S001</td> <td>ISWC0083S001</td> </tr> <tr> <td>Collection Date:</td> <td>7/1/2009</td> <td>7/29/2009</td> <td>7/29/2009</td> <td>7/29/2009</td> <td>7/29/2009</td> <td>7/29/2009</td> <td>7/30/2009</td> <td>7/30/2009</td> </tr> <tr> <td>Sample Depth (feet):</td> <td>0.4 - 0.9</td> <td>0.3 - 0.7</td> <td>1.0 - 1.5</td> <td>0.7 - 1.3</td> <td>0.3 - 0.7</td> <td>1.5 - 2.0</td> <td>1.0 - 1.5</td> <td>1.0 - 1.5</td> </tr> </table>										Object Name:	ISWC0028	ISWC0077	ISWC0078	ISWC0079	ISWC0080	ISWC0081	ISWC0082	ISWC0083	Sample Name:	ISWC0028S001	ISWC0077S001	ISWC0078S001	ISWC0079S001	ISWC0080S001	ISWC0081S001	ISWC0082S001	ISWC0083S001	Collection Date:	7/1/2009	7/29/2009	7/29/2009	7/29/2009	7/29/2009	7/29/2009	7/30/2009	7/30/2009	Sample Depth (feet):	0.4 - 0.9	0.3 - 0.7	1.0 - 1.5	0.7 - 1.3	0.3 - 0.7	1.5 - 2.0	1.0 - 1.5	1.0 - 1.5
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ANALYTE	UNITS	TTLCL	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	4.2	8.9	3.7	4.3	5.2	4.5	3.7	3.1																																				
Barium	mg/kg	10,000	1,000	2,000	59	54	48	53	99	92	81	84																																				
Beryllium	mg/kg	75	7.5	--	0.63	0.85	0.51	0.62	0.84	0.68	0.55	0.54																																				
Cadmium	mg/kg	100	10	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5																																				
Chromium	mg/kg	500	50	100	12	23	9.7	12	17	14	14	13																																				
Cobalt	mg/kg	8,000	800	--	4.1	7.7	3	3.6	7.5	5.5	4.2	4.3																																				
Copper	mg/kg	2,500	250	--	8.9	17	3.8	4.7	8.5	5.8	7.1	6.9																																				
Lead	mg/kg	1,000	50	100	30	8.4	3.4	5.9	8.2	4.6	19	17																																				
Mercury	mg/kg	20	2	4	0.02 J	0.025 J	<0.033	0.012 J	0.018 J	0.0083 J	0.012 J	0.011 J																																				
Molybdenum	mg/kg	3,500	3,500	--	0.82 J	0.22 J	<2	<2	<2	<2	<2	<2																																				
Nickel	mg/kg	2,000	200	--	9.1	14	4.4	7.4	12	9.6	9.7	9.5																																				
Selenium	mg/kg	100	10	20	<2	<2	<2	<2	<2	1.5 J	1.3 J	<2																																				
Silver	mg/kg	500	50	100	<1	<1	<1	<1	<1	<1	<1	<1																																				
Thallium	mg/kg	700	70	--	0.81 J	<10	<10	<10	<10	<10	<10	<10																																				
Vanadium	mg/kg	2,400	240	--	23	33	19	22	31	27	24	23																																				
Zinc	mg/kg	5,000	2,500	--	38	53	31	34	42	37	41	39																																				
RADIONUCLIDES																																																
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NOTES

"--" - not applicable

^a - WET Leachate Testing Trigger = STLC limit * 10

^b - TCLP Leachate Testing Trigger = TCLP limit * 20

B - analyte was detected in the associated method blank

J - Result is estimated

M2 - the matrix spike and/or matrix spike duplicate were below the acceptance limits due to matrix interference

mg/kg - milligrams per kilogram

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.

This table presents only those waste characterization sample results that actually fall within the boundaries of the final, revised excavation footprints. Other results may have been used in the initial soil characterization, but no longer fall within the final excavation footprints. These results are not included in this table, but have been reassigned as data gap information and are reported elsewhere.