APPENDIX O

INVESTIGATION-DERIVED WASTE MANAGEMENT REPORT

Science Applications International Corporation
An Employee-Owned Company

April 11, 2001

Mr. Walter Perro
U.S. Army Corps of Engineers
Louisville District
ATTN: CEORL-ED-GE
600 Martin Luther King, Jr. Place
Louisville, KY 40201-0059

SUBJECT: **Contract No. DACA27-97-D-0025, Delivery Order 0003, Phase II Remedial Investigation at Load Line 1, at the Ravenna Army Ammunition Plant, Ravenna, Ohio**

RE: **Deliverable – Investigation-Derived Waste Characterization and Disposal Report**

Dear Mr. Perro:

Investigative activities conducted during the Phase II Remedial Investigation (RI) of Load Line 1 (September and October 2000) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, resulted in the generation of investigation-derived waste (IDW) consisting of soil, water, and field laboratory reagents. The IDW was generated in the course of sampling of soils and groundwater, field analysis of explosives, and decontamination of sampling equipment. The purpose of this letter report is to characterize and classify eight drums containing unsaturated soil cuttings for disposal. The characterization and classification of the other waste streams was provided in separate letter reports submitted in January and March, 2001.

This report includes a summary of IDW generated and its origin (Table 1), comparisons of characterization sampling results to regulatory criteria (Table 2), and classification of the solid IDW and recommendations for disposal (Table 3). This document follows guidance established by the Facility-Wide Sampling and Analysis Plan (USACE 2000), the Phase II RI Work Plan Addendum No. 2 for Load Line 1 (USACE 2000), and the Ohio EPA (November 1997) regarding IDW disposition at RVAAP.

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Table 1. Summary of Load Line 1 Phase II RI IDW

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
LL1-001	55-gallon open-top	Unsaturated soil; full	9/12 to 9/15/00
LL1-002	55-gallon open-top	Unsaturated soil; full	9/15 to 9/17/01
LL1-003	55-gallon open-top	Unsaturated soil; full	9/17 to 9/26/00
LL1-006	55-gallon open-top	Unsaturated soil; full	9/26 to 9/27/00
LL1-007	55-gallon open-top	Unsaturated soil; full	9/27 to 9/29/00
LL1-008	55-gallon open-top	Unsaturated soil; full	9/29 to 9/30/00
LL1-009	55-gallon open-top	Unsaturated soil; full	9/30 to 10/1/00
LL1-012	55-gallon open-top	Unsaturated soil; full	10/16 to 10/17/00

Per Section 7 of the Facility-Wide SAP (USACE 2000), the analytical results from environmental samples collected during the Phase II RI are used, where possible, to characterize IDW for each sampling medium. The analytical results from the sampling of shallow soil borings are used to characterize the drums listed in Table 1 containing correlative soil IDW for waste characterization. Analytical results used to characterize waste containers are shown in Attachment 1.

Attachment 1 presents the frequency of detects, minimum and maximum detected concentrations, and average concentrations for each analyte. Note that the average value is calculated from all reported values, using either the detected concentration or, if the analyte was not detected, the quantitation limit for that sample. For analyses that include non-detects, the average represents an upper bound on the true average. Because quantitation limits vary between samples, the calculated average may exceed the maximum detect in cases where a high percentage of non-detects are included. Because surface soil drums contain IDW from several sampling locations within Load Line 1, minimum, maximum, and mean concentrations from all samples contained in each drum are presented for the characterization of wastes in each container.

For the characterization of wastes as hazardous or non-hazardous, the Resource Conservation and Recovery Act (RCRA) regulatory limits are compared to the maximum contaminant levels as presented in Attachment 1. Table 7-1 of the Facility-Wide SAP shows the maximum concentration of contaminants for the toxicity characteristic for hazardous wastes per 40 CFR 261.24. Analytical results for the correlative IDW are compared with these criteria to determine whether any wastes are potentially hazardous. Results from total analysis in mg/kg for analytes having corresponding TCLP criteria were divided by 20 to estimate the extractable concentration in mg/L assuming all of the chemical were leached (due to the 20-fold dilution factor inherent in the TCLP method). These estimated concentrations were compared to the TCLP criteria. If a given analyte is found to exceed 20 times the regulatory limit, it is conservatively considered to be RCRA-hazardous waste. All containers of soil IDW that were determined to be potentially RCRA-hazardous were conservatively managed as such until the time of disposal, without TCLP testing.

The eight drums of IDW from Load Line 1 were potentially hazardous based on the above comparison method. Comparison of the results above detection limits to TCLP criteria are shown in Table 2.

Table 2. Comparison of Characterization Results for Load Line 1 to TCLP Criteria

Drum I.D.	Chemical	Max. Assumed Leachate Conc. (mg/L)	TCLP Criterion (mg/L)	TCLP Pass/Fail
LL1-001	Cadmium	1.37	1	F
	Chromium	20	5	F
	Lead	357	5	F
	Mercury	0.485	0.2	F
	Heptachlor	0.016	0.008	F
LL1-002	Cadmium	1.37	1	F
	Lead	33.7	5	F
LL1-003	Arsenic	5	5.6	F
	Cadmium	2.41	1	F
	Chromium	15.6	5	F
	Lead	88.5	5	F
	2,4-DNT	0.465	0.13	F
LL1-006	Cadmium	2.41	1	F
	Chromium	15.6	5	F
	Lead	88.5	5	F
	2,4-DNT	0.465	0.13	F
LL1-007	Chromium	19.3	5	F
	Lead	126	5	F
LL1-008	Chromium	19.3	5	F
	Lead	126	5	F
LL1-009	Lead	31.8	5	F
LL1-012	Arsenic	5.6	4	F
	Cadmium	1.37	1	F
	Chromium	6.4	5	F
	Lead	104	5	F
	Heptachlor	0.016	0.008	F

The drums are classified as hazardous waste based upon analyses of the soil environmental samples, as shown in Table 3 and Attachment 1. The soil IDW contains trace amounts of cadmium, chromium, and lead, as well as explosives in trace amounts. These containers are recommended for off-site disposal at a licensed solid waste disposal facility.

Table 3. Summary of Final Waste Classification and Recommended Disposal Options

Hazardous Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
LL1-001	Soils	Inorganics, pesticide	Permitted Solid Waste Facility
LL1-002	Soils	Inorganics	Permitted Solid Waste Facility
LL1-003	Soils	Inorganics, explosives	Permitted Solid Waste Facility
LL1-006	Soils	Inorganics, explosives	Permitted Solid Waste Facility
LL1-007	Soils	Inorganics	Permitted Solid Waste Facility
LL1-008	Soils	Inorganics	Permitted Solid Waste Facility
LL1-009	Soils	Inorganics	Permitted Solid Waste Facility
LL1-012	Soils	Inorganics, pesticide	Permitted Solid Waste Facility

Please note that this Load Line 1 IDW has been characterized using comparisons of direct analysis to TCLP criteria for those parameters identified in the Load Line 1 Phase II RI Sampling and Analysis Plan Addendum No. 2 as the basis for comparison. Unless RVAAP has additional information that would result in the IDW meeting, or containing materials that meet, the definition of a listed hazardous waste as defined in 40 CFR Part 261 Subpart D, it is recommended that the IDW, as presently characterized under provisions of the Facility-Wide Sampling and Analysis Plan and Load Line 1 Phase II RI Sampling and Analysis Plan Addendum No. 2, be disposed as hazardous solid waste.

Since RVAAP, under RCRA, is the generator of this material, SAIC requests concurrence or direction on the waste classification prior to disposal to ensure that the materials are properly disposed. Following your direction and immediate approval, we will proceed with the appropriate waste disposal. Disposal will be scheduled for April, 2001.

If you have any questions or require additional information, please do not hesitate to contact me at 918-625-7614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathy Dominic
Environmental Projects Manager

CC: John Jent, USACE
Eileen Mohr, Ohio EPA
Mark Patterson, RVAAP
Kevin Jago, SAIC
Steve Selecman, SAIC

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Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-001		Cyanide	Cyanide	MG/KG	7/ 43	0.722	3.8	LL1ss-001-0800-SO				
LL1-001		Inorganics	Aluminum	MG/KG	65/ 65	8900	19600	LL1ss-144-0819-SO				
LL1-001		Inorganics	Antimony	MG/KG	9/ 65	1.26	3	LL1ss-009-0829-SO				
LL1-001	N	Inorganics	Arsenic	MG/KG	65/ 65	10	15.8	LL1ss-277-1005-SO	5	0/ 65	0.502	0.79
LL1-001	N	Inorganics	Barium	MG/KG	65/ 65	164	1970	LL1ss-153-0828-SO	100	0/ 65	8.22	98.5
LL1-001		Inorganics	Beryllium	MG/KG	34/ 65	0.463	2.6	LL1ss-155-0844-SO				
LL1-001	Y	Inorganics	Cadmium	MG/KG	65/ 65	2.51	27.3	LL1ss-153-0828-SO	1	1/ 65	0.125	1.37
LL1-001		Inorganics	Calcium	MG/KG	64/ 65	12400	121000	LL1ss-155-0844-SO				
LL1-001	Y	Inorganics	Chromium	MG/KG	65/ 65	26.1	400	LL1ss-009-0829-SO	5	2/ 65	1.31	20
LL1-001		Inorganics	Cobalt	MG/KG	64/ 65	7.53	21.8	LL1ss-008-0817-SO				
LL1-001		Inorganics	Copper	MG/KG	65/ 65	89.2	3680	LL1ss-148-0823-SO				
LL1-001		Inorganics	Iron	MG/KG	65/ 65	20000	82700	LL1ss-009-0829-SO				
LL1-001	Y	Inorganics	Lead	MG/KG	65/ 65	372	7130	LL1ss-009-0829-SO	5	28/ 65	18.6	357
LL1-001		Inorganics	Magnesium	MG/KG	65/ 65	2680	15300	LL1ss-155-0844-SO				
LL1-001		Inorganics	Manganese	MG/KG	65/ 65	673	3500	LL1ss-008-0817-SO				
LL1-001	Y	Inorganics	Mercury	MG/KG	61/ 65	0.419	9.7	LL1ss-153-0828-SO	0.2	2/ 65	0.021	0.485
LL1-001		Inorganics	Nickel	MG/KG	64/ 65	15.7	68.5	LL1ss-009-0829-SO				
LL1-001		Inorganics	Potassium	MG/KG	64/ 65	878	2170	LL1ss-155-0844-SO				
LL1-001	N	Inorganics	Selenium	MG/KG	50/ 65	0.876	1.5	LL1ss-009-0829-SO	1	0/ 65	0.0438	0.075
LL1-001	N	Inorganics	Silver	MG/KG	4/ 65	1.09	0.26	LL1ss-157-0846-SO	5	0/ 65	0.0544	0.013
LL1-001		Inorganics	Sodium	MG/KG	12/ 65	439	511	LL1ss-009-0829-SO				
LL1-001		Inorganics	Thallium	MG/KG	58/ 65	0.45	0.69	LL1ss-166-0859-SO				
LL1-001		Inorganics	Vanadium	MG/KG	65/ 65	15.7	36.5	LL1ss-166-0859-SO				
LL1-001		Inorganics	Zinc	MG/KG	65/ 65	214	1690	LL1ss-009-0829-SO				
LL1-001		Explosives	1,3,5-Trinitrobenzene	MG/KG	1/ 39	5.29	4	LL1ss-157-0846-SO				
LL1-001		Explosives	1,3-Dinitrobenzene	MG/KG	1/ 39	5.44	0.034	LL1ss-157-0846-SO				
LL1-001		Explosives	2,4,6-Trinitrotoluene	MG/KG	32/ 39	166	4800	LL1ss-157-0846-SO				
LL1-001	N	Explosives	2,4-Dinitrotoluene	MG/KG	8/ 39	5.4	0.23	LL1ss-157-0846-SO	0.13	0/ 39	0.27	0.0115
LL1-001		Explosives	2,6-Dinitrotoluene	MG/KG	5/ 39	5.42	0.86	LL1ss-157-0846-SO				
LL1-001		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	26/ 39	5.54	11	LL1ss-157-0846-SO				
LL1-001		Explosives	2-Nitrotoluene	MG/KG	2/ 39	5.43	0.69	LL1ss-157-0846-SO				
LL1-001		Explosives	3-Nitrotoluene	MG/KG	4/ 39	5.44	0.18	LL1ss-157-0846-SO				
LL1-001		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	12/ 39	28	4.4	LL1ss-157-0846-SO				
LL1-001		Explosives	4-Nitrotoluene	MG/KG	3/ 39	5.44	0.2	LL1ss-157-0846-SO				
LL1-001		Explosives	HMX	MG/KG	7/ 39	9.95	260	LL1ss-157-0846-SO				
LL1-001	N	Explosives	Nitrobenzene	MG/KG	6/ 39	5.37	0.59	LL1ss-157-0846-SO	2	0/ 39	0.268	0.0295
LL1-001		Explosives	Nitrocellulose	MG/KG	30/ 39	18.8	388	LL1ss-157-0846-SO				
LL1-001		Explosives	RDX	MG/KG	9/ 39	67.3	2300	LL1ss-157-0846-SO				
LL1-001		Pesticides and PCBs	4,4'-DDE	MG/KG	8/ 10	0.854	6.7	LL1ss-148-0823-SO				
LL1-001		Pesticides and PCBs	Dieldrin	MG/KG	2/ 10	0.0746	0.55	LL1ss-148-0823-SO				

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-001		Pesticides and PCBs	Endrin aldehyde	MG/KG	7/ 10	0.529	4.4	LL1ss-148-0823-SO				
LL1-001	Y	Pesticides and PCBs	Heptachlor	MG/KG	2/ 10	0.0796	0.32	LL1ss-148-0823-SO	0.008	1/ 10	0.00398	0.016
LL1-001	N	Pesticides and PCBs	Methoxychlor	MG/KG	1/ 10	0.113	0.014	LL1ss-148-0823-SO	10	0/ 10	0.00563	0.0007
LL1-001		Pesticides and PCBs	PCB-1254	MG/KG	8/ 10	119	1100	LL1ss-148-0823-SO				
LL1-001		Pesticides and PCBs	alpha-Chlordane	MG/KG	1/ 10	0.0622	0.44	LL1ss-148-0823-SO				
LL1-001		Pesticides and PCBs	gamma-Chlordane	MG/KG	5/ 10	0.587	5.3	LL1ss-148-0823-SO				
LL1-001	N	Semi-Volatile Organics	2,4-Dinitrotoluene	MG/KG	1/ 10	0.613	0.053	LL1ss-148-0823-SO	0.13	0/ 10	0.0307	0.00265
LL1-001		Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	1/ 10	0.614	0.077	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Acenaphthene	MG/KG	1/ 10	0.629	0.23	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Anthracene	MG/KG	2/ 10	0.522	0.55	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	3/ 10	0.645	1.2	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	3/ 10	0.608	1	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	5/ 10	0.615	1.4	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	2/ 10	0.545	0.55	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	2/ 10	0.557	0.58	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	3/ 10	0.557	0.081	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Butyl benzyl phthalate	MG/KG	1/ 10	0.614	0.05	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Carbazole	MG/KG	1/ 10	0.644	0.38	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Chrysene	MG/KG	3/ 10	0.639	1.1	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Dibenz(a,h)anthracene	MG/KG	1/ 10	0.616	0.096	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Dibenzofuran	MG/KG	1/ 10	0.625	0.19	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Fluoranthene	MG/KG	6/ 10	0.73	2.9	LL1ss-168-0862-SO				
LL1-001		Semi-Volatile Organics	Fluorene	MG/KG	1/ 10	0.637	0.31	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	2/ 10	0.556	0.62	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Naphthalene	MG/KG	1/ 10	0.628	0.22	LL1ss-148-0823-SO				
LL1-001		Semi-Volatile Organics	Phenanthrene	MG/KG	4/ 10	0.734	2.5	LL1ss-168-0862-SO				
LL1-001		Semi-Volatile Organics	Pyrene	MG/KG	4/ 10	0.817	2.3	LL1ss-168-0862-SO				
LL1-001		Volatile Organics	1,2-Dichloroethene	MG/KG	10/ 10	0.00789	0.018	LL1ss-001-0800-SO				
LL1-001		Volatile Organics	Acetone	MG/KG	1/ 10	0.011	0.0086	LL1ss-001-0800-SO				
LL1-002		Cyanide	Cyanide	MG/KG	2/ 26	0.734	1.8	LL1ss-327-1199-SO				
LL1-002		Inorganics	Aluminum	MG/KG	57/ 57	11200	46100	LL1ss-327-1199-SO				
LL1-002		Inorganics	Antimony	MG/KG	3/ 57	1.24	1	LL1ss-327-1199-SO				
LL1-002	N	Inorganics	Arsenic	MG/KG	57/ 57	12.4	55.6	LL1ss-327-1199-SO	5	0/ 57	0.62	2.78
LL1-002	N	Inorganics	Barium	MG/KG	57/ 57	79.1	408	LL1ss-327-1199-SO	100	0/ 57	3.96	20.4
LL1-002		Inorganics	Beryllium	MG/KG	40/ 57	0.506	2.1	LL1ss-327-1199-SO				
LL1-002	Y	Inorganics	Cadmium	MG/KG	49/ 57	1.23	27.3	LL1ss-186-0893-SO	1	1/ 57	0.0617	1.37
LL1-002		Inorganics	Calcium	MG/KG	57/ 57	4930	56000	LL1ss-013-0834-SO				
LL1-002	N	Inorganics	Chromium	MG/KG	57/ 57	15.7	74.1	LL1ss-327-1199-SO	5	0/ 57	0.787	3.71
LL1-002		Inorganics	Cobalt	MG/KG	57/ 57	9.84	49.3	LL1ss-327-1199-SO				
LL1-002		Inorganics	Copper	MG/KG	57/ 57	20.9	106	LL1ss-327-1199-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-002		Inorganics	Iron	MG/KG	57/ 57	24100	111000	LL1ss-327-1199-SO				
LL1-002	Y	Inorganics	Lead	MG/KG	57/ 57	59.4	674	LL1ss-333-1205-SO	5	7/ 57	2.97	33.7
LL1-002		Inorganics	Magnesium	MG/KG	57/ 57	2780	13100	LL1ss-327-1199-SO				
LL1-002		Inorganics	Manganese	MG/KG	57/ 57	592	2220	LL1ss-258-0986-SO				
LL1-002	N	Inorganics	Mercury	MG/KG	55/ 57	0.047	0.12	LL1ss-255-0983-SO	0.2	0/ 57	0.00235	0.006
LL1-002		Inorganics	Nickel	MG/KG	57/ 57	19.2	101	LL1ss-327-1199-SO				
LL1-002		Inorganics	Potassium	MG/KG	57/ 57	1120	5700	LL1ss-327-1199-SO				
LL1-002	N	Inorganics	Selenium	MG/KG	39/ 57	0.889	1.8	LL1ss-327-1199-SO	1	0/ 57	0.0444	0.09
LL1-002		Inorganics	Sodium	MG/KG	9/ 57	515	308	LL1ss-327-1199-SO				
LL1-002		Inorganics	Thallium	MG/KG	57/ 57	0.608	2.5	LL1ss-327-1199-SO				
LL1-002		Inorganics	Vanadium	MG/KG	57/ 57	20.7	77.9	LL1ss-327-1199-SO				
LL1-002		Inorganics	Zinc	MG/KG	57/ 57	114	658	LL1ss-327-1199-SO				
LL1-002		Explosives	1,3,5-Trinitrobenzene	MG/KG	2/ 28	0.488	0.16	LL1ss-136-0791-SO				
LL1-002		Explosives	1,3-Dinitrobenzene	MG/KG	2/ 28	0.482	0.062	LL1ss-136-0791-SO				
LL1-002		Explosives	2,4,6-Trinitrotoluene	MG/KG	12/ 28	8.82	180	LL1ss-136-0791-SO				
LL1-002	N	Explosives	2,4-Dinitrotoluene	MG/KG	3/ 28	0.478	0.091	LL1ss-136-0791-SO	0.13	0/ 28	0.0239	0.00455
LL1-002		Explosives	2,6-Dinitrotoluene	MG/KG	2/ 28	0.481	0.86	LL1ss-136-0791-SO				
LL1-002		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	11/ 28	0.638	4.9	LL1ss-136-0791-SO				
LL1-002		Explosives	2-Nitrotoluene	MG/KG	1/ 28	0.499	0.18	LL1ss-136-0791-SO				
LL1-002		Explosives	3-Nitrotoluene	MG/KG	3/ 28	0.488	0.18	LL1ss-136-0791-SO				
LL1-002		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	8/ 28	1.03	5.9	LL1ss-137-0792-SO				
LL1-002		Explosives	4-Nitrotoluene	MG/KG	1/ 28	0.494	0.16	LL1ss-136-0791-SO				
LL1-002	N	Explosives	Nitrobenzene	MG/KG	4/ 28	0.475	0.16	LL1ss-136-0791-SO	2	0/ 28	0.0237	0.008
LL1-002		Explosives	Nitrocellulose	MG/KG	4/ 28	2.54	13.4	LL1ss-137-0792-SO				
LL1-002		Pesticides and PCBs	4,4'-DDE	MG/KG	3/ 6	0.0378	0.12	LL1ss-179-0884-SO				
LL1-002		Pesticides and PCBs	Endrin aldehyde	MG/KG	2/ 6	0.0523	0.21	LL1ss-179-0884-SO				
LL1-002		Pesticides and PCBs	Endrin ketone	MG/KG	1/ 6	0.0305	0.081	LL1ss-179-0884-SO				
LL1-002		Pesticides and PCBs	PCB-1254	MG/KG	6/ 6	1	4.3	LL1ss-179-0884-SO				
LL1-002		Pesticides and PCBs	beta-BHC	MG/KG	1/ 6	0.0536	0.22	LL1ss-179-0884-SO				
LL1-002		Pesticides and PCBs	gamma-Chlordane	MG/KG	2/ 6	0.0263	0.052	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Acenaphthene	MG/KG	1/ 6	0.715	2.4	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Anthracene	MG/KG	1/ 6	1.28	5.8	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	3/ 6	2.55	14	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	3/ 6	2.38	13	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	3/ 6	2.73	15	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	3/ 6	1.57	8.2	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	1/ 6	1.27	5.7	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	1/ 6	1.09	0.11	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Carbazole	MG/KG	1/ 6	0.998	4.1	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Chrysene	MG/KG	3/ 6	2.72	15	LL1ss-179-0884-SO				

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-002		Semi-Volatile Organics	Dibenz(a,h)anthracene	MG/KG	1/ 6	0.598	1.7	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Dibenzofuran	MG/KG	1/ 6	0.532	1.3	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Fluoranthene	MG/KG	3/ 6	6.75	39	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Fluorene	MG/KG	1/ 6	0.698	2.3	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	3/ 6	1.66	8.7	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Phenanthrene	MG/KG	3/ 6	5.23	30	LL1ss-179-0884-SO				
LL1-002		Semi-Volatile Organics	Pyrene	MG/KG	3/ 6	7.08	41	LL1ss-179-0884-SO				
LL1-002		Volatile Organics	1,2-Dichloroethene	MG/KG	6/ 6	0.00463	0.0079	LL1ss-027-0882-SO				
LL1-002		Volatile Organics	Acetone	MG/KG	1/ 6	0.0117	0.011	LL1ss-181-0886-SO				
LL1-003		General Chemistry	Chromium, hexavalent	MG/KG	3/ 74	1.68	15.5	LL1ss-024-1112-SO				
LL1-003		Cyanide	Cyanide	MG/KG	6/ 40	0.834	2.4	LL1ss-095-0734-SO				
LL1-003		Inorganics	Aluminum	MG/KG	94/ 94	11200	97300	LL1ss-095-0734-SO				
LL1-003		Inorganics	Antimony	MG/KG	24/ 94	12.8	648	LL1ss-184-0890-SO				
LL1-003	Y	Inorganics	Arsenic	MG/KG	94/ 94	11.6	112	LL1ss-095-0734-SO	5	1/ 94	0.58	5.6
LL1-003	N	Inorganics	Barium	MG/KG	94/ 94	93.1	572	LL1ss-095-0734-SO	100	0/ 94	4.66	28.6
LL1-003		Inorganics	Beryllium	MG/KG	55/ 94	0.641	3.4	LL1ss-112-0758-SO				
LL1-003	Y	Inorganics	Cadmium	MG/KG	48/ 94	2.24	48.2	LL1ss-107-0752-SO	1	2/ 94	0.112	2.41
LL1-003		Inorganics	Calcium	MG/KG	94/ 94	14400	153000	LL1ss-112-0758-SO				
LL1-003	Y	Inorganics	Chromium	MG/KG	94/ 94	23.5	312	LL1ss-109-0755-SO	5	4/ 94	1.17	15.6
LL1-003		Inorganics	Cobalt	MG/KG	94/ 94	9.15	72.3	LL1ss-095-0734-SO				
LL1-003		Inorganics	Copper	MG/KG	94/ 94	111	2390	LL1ss-112-0758-SO				
LL1-003		Inorganics	Iron	MG/KG	94/ 94	23600	198000	LL1ss-095-0734-SO				
LL1-003	Y	Inorganics	Lead	MG/KG	94/ 94	127	1770	LL1ss-109-0755-SO	5	22/ 94	6.37	88.5
LL1-003		Inorganics	Magnesium	MG/KG	94/ 94	3500	23100	LL1ss-091-0728-SO				
LL1-003		Inorganics	Manganese	MG/KG	94/ 94	793	4700	LL1ss-095-0734-SO				
LL1-003	N	Inorganics	Mercury	MG/KG	89/ 94	0.0812	1.2	LL1ss-029-0865-SO	0.2	0/ 94	0.00406	0.06
LL1-003		Inorganics	Nickel	MG/KG	94/ 94	18.1	160	LL1ss-095-0734-SO				
LL1-003		Inorganics	Potassium	MG/KG	94/ 94	1120	11600	LL1ss-095-0734-SO				
LL1-003	N	Inorganics	Selenium	MG/KG	35/ 94	1.05	5.3	LL1ss-024-0981-SO	1	0/ 94	0.0523	0.265
LL1-003	N	Inorganics	Silver	MG/KG	6/ 94	1.27	0.88	LL1ss-095-0734-SO	5	0/ 94	0.0634	0.044
LL1-003		Inorganics	Sodium	MG/KG	18/ 94	424	1630	LL1ss-095-0734-SO				
LL1-003		Inorganics	Thallium	MG/KG	94/ 94	0.581	4.6	LL1ss-095-0734-SO				
LL1-003		Inorganics	Vanadium	MG/KG	94/ 94	19.3	179	LL1ss-095-0734-SO				
LL1-003		Inorganics	Zinc	MG/KG	94/ 94	225	2060	LL1ss-109-0755-SO				
LL1-003		Explosives	1,3,5-Trinitrobenzene	MG/KG	3/ 38	0.602	0.16	LL1ss-265-0993-SO				
LL1-003		Explosives	2,4,6-Trinitrotoluene	MG/KG	21/ 38	9.64	300	LL1ss-265-0993-SO				
LL1-003	Y	Explosives	2,4-Dinitrotoluene	MG/KG	10/ 38	0.847	9.3	LL1ss-265-0993-SO	0.13	1/ 38	0.0423	0.465
LL1-003		Explosives	2,6-Dinitrotoluene	MG/KG	2/ 38	0.641	0.36	LL1ss-265-0993-SO				
LL1-003		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	11/ 38	0.759	3.4	LL1ss-265-0993-SO				
LL1-003		Explosives	3-Nitrotoluene	MG/KG	1/ 38	0.61	0.18	LL1ss-265-0993-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-003		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	8/ 38	0.986	5.9	LL1ss-265-0993-SO				
LL1-003		Explosives	4-Nitrotoluene	MG/KG	1/ 38	0.611	0.2	LL1ss-265-0993-SO				
LL1-003		Explosives	HMX	MG/KG	9/ 38	1.36	6.9	LL1ss-265-0993-SO				
LL1-003	N	Explosives	Nitrobenzene	MG/KG	1/ 38	0.608	0.12	LL1ss-265-0993-SO	2	0/ 38	0.0304	0.006
LL1-003		Explosives	Nitrocellulose	MG/KG	23/ 38	25.6	512	LL1ss-099-1118-SO				
LL1-003		Explosives	RDX	MG/KG	7/ 38	3.79	50	LL1ss-174-0876-SO				
LL1-003		Pesticides and PCBs	4,4'-DDE	MG/KG	7/ 17	0.0383	0.2	LL1ss-091-0728-SO				
LL1-003		Pesticides and PCBs	4,4'-DDT	MG/KG	3/ 17	0.0225	0.041	LL1ss-169-0869-SO				
LL1-003		Pesticides and PCBs	Dieldrin	MG/KG	2/ 17	0.0205	0.036	LL1ss-108-1120-SO				
LL1-003		Pesticides and PCBs	Endrin aldehyde	MG/KG	7/ 17	0.0495	0.3	LL1ss-091-0728-SO				
LL1-003		Pesticides and PCBs	Endrin ketone	MG/KG	3/ 17	0.0214	0.081	LL1ss-179-0884-SO				
LL1-003		Pesticides and PCBs	Heptachlor epoxide	MG/KG	1/ 17	0.02	0.031	LL1ss-181-0886-SO				
LL1-003	N	Pesticides and PCBs	Methoxychlor	MG/KG	2/ 17	0.0369	0.026	LL1ss-179-0884-SO	10	0/ 17	0.00185	0.0013
LL1-003		Pesticides and PCBs	PCB-1016	MG/KG	1/ 19	0.189	0.14	LL1ss-091-0728-SO				
LL1-003		Pesticides and PCBs	PCB-1254	MG/KG	13/ 20	0.764	4.7	LL1ss-091-0728-SO				
LL1-003		Pesticides and PCBs	alpha-Chlordane	MG/KG	1/ 17	0.0188	0.0049	LL1ss-181-0886-SO				
LL1-003		Pesticides and PCBs	beta-BHC	MG/KG	4/ 17	0.0299	0.22	LL1ss-179-0884-SO				
LL1-003		Pesticides and PCBs	gamma-Chlordane	MG/KG	5/ 17	0.0268	0.13	LL1ss-091-0728-SO				
LL1-003		Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	6/ 18	0.789	0.17	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Acenaphthene	MG/KG	2/ 18	0.727	2.4	LL1ss-169-0869-SO				
LL1-003		Semi-Volatile Organics	Anthracene	MG/KG	3/ 18	0.906	5.8	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	9/ 18	1.31	14	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	10/ 18	1.26	13	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	10/ 18	1.42	15	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	9/ 18	0.978	8.2	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	5/ 18	0.884	5.7	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	2/ 18	0.852	0.14	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Carbazole	MG/KG	3/ 18	0.808	4.1	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Chrysene	MG/KG	8/ 18	1.4	15	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Di-n-butyl phthalate	MG/KG	5/ 18	0.9	0.79	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Dibenz(a,h)anthracene	MG/KG	3/ 18	0.678	1.7	LL1ss-169-0869-SO				
LL1-003		Semi-Volatile Organics	Dibenzofuran	MG/KG	2/ 18	0.663	1.3	LL1ss-169-0869-SO				
LL1-003		Semi-Volatile Organics	Fluoranthene	MG/KG	10/ 18	2.79	39	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Fluorene	MG/KG	2/ 18	0.721	2.3	LL1ss-169-0869-SO				
LL1-003		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	9/ 18	1.01	8.7	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	N-Nitrosodiphenylamine	MG/KG	1/ 18	0.864	0.057	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Naphthalene	MG/KG	5/ 18	0.8	0.11	LL1ss-179-0884-SO				
LL1-003	N	Semi-Volatile Organics	Pentachlorophenol	MG/KG	1/ 18	2.1	0.083	LL1ss-179-0884-SO	100	0/ 18	0.105	0.00415
LL1-003		Semi-Volatile Organics	Phenanthrene	MG/KG	9/ 18	2.21	30	LL1ss-179-0884-SO				
LL1-003		Semi-Volatile Organics	Phenol	MG/KG	2/ 18	0.844	0.05	LL1ss-179-0884-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-003		Semi-Volatile Organics	Pyrene	MG/KG	9/ 18	2.89	41	LL1ss-179-0884-SO				
LL1-003		Total Organic Carbon	Total Organic Carbon	MG/KG	1/ 1	2600	2600	LL1ss-038-0735-SO				
LL1-003		Volatile Organics	1,2-Dichloroethene	MG/KG	15/ 18	0.00503	0.0083	LL1ss-024-0981-SO				
LL1-003		Volatile Organics	Acetone	MG/KG	1/ 18	0.0139	0.005	LL1ss-024-1112-SO				
LL1-003		Volatile Organics	Methylene chloride	MG/KG	6/ 18	0.00561	0.0033	LL1ss-024-1112-SO				
LL1-003		Volatile Organics	Toluene	MG/KG	2/ 18	0.0063	0.0031	LL1ss-024-1112-SO				
LL1-006		General Chemistry	Chromium, hexavalent	MG/KG	2/ 38	1.81	15.5	LL1ss-024-1112-SO				
LL1-006		Cyanide	Cyanide	MG/KG	4/ 45	0.656	1	LL1ss-024-1112-SO				
LL1-006		Inorganics	Aluminum	MG/KG	67/ 67	12000	25800	LL1ss-117-0763-SO				
LL1-006		Inorganics	Antimony	MG/KG	23/ 67	1.34	9.1	LL1ss-109-0755-SO				
LL1-006	N	Inorganics	Arsenic	MG/KG	67/ 67	10.6	18.6	LL1ss-024-0981-SO	5	0/ 67	0.529	0.93
LL1-006	N	Inorganics	Barium	MG/KG	67/ 67	113	410	LL1ss-118-0764-SO	100	0/ 67	5.65	20.5
LL1-006		Inorganics	Beryllium	MG/KG	37/ 67	0.773	3.4	LL1ss-112-0758-SO				
LL1-006	Y	Inorganics	Cadmium	MG/KG	43/ 67	2.67	48.2	LL1ss-107-0752-SO	1	1/ 67	0.134	2.41
LL1-006		Inorganics	Calcium	MG/KG	60/ 67	22900	162000	LL1ss-118-0764-SO				
LL1-006	Y	Inorganics	Chromium	MG/KG	67/ 67	23.5	312	LL1ss-109-0755-SO	5	1/ 67	1.17	15.6
LL1-006		Inorganics	Cobalt	MG/KG	67/ 67	9.16	40.6	LL1ss-099-1118-SO				
LL1-006		Inorganics	Copper	MG/KG	67/ 67	150	2390	LL1ss-112-0758-SO				
LL1-006		Inorganics	Iron	MG/KG	67/ 67	21000	58000	LL1ss-129-0782-SO				
LL1-006	Y	Inorganics	Lead	MG/KG	67/ 67	147	1770	LL1ss-109-0755-SO	5	17/ 67	7.37	88.5
LL1-006		Inorganics	Magnesium	MG/KG	67/ 67	4630	20200	LL1ss-117-0763-SO				
LL1-006		Inorganics	Manganese	MG/KG	67/ 67	1060	4070	LL1ss-205-0915-SO				
LL1-006	N	Inorganics	Mercury	MG/KG	65/ 67	0.0694	0.41	LL1ss-109-0755-SO	0.2	0/ 67	0.00347	0.0205
LL1-006		Inorganics	Nickel	MG/KG	67/ 67	17.9	62.4	LL1ss-109-0755-SO				
LL1-006		Inorganics	Potassium	MG/KG	67/ 67	1070	3610	LL1ss-068-0748-SO				
LL1-006	N	Inorganics	Selenium	MG/KG	20/ 67	0.994	5.3	LL1ss-024-0981-SO	1	0/ 67	0.0497	0.265
LL1-006	N	Inorganics	Silver	MG/KG	3/ 67	1.25	0.23	LL1ss-024-1112-SO	5	0/ 67	0.0627	0.0115
LL1-006		Inorganics	Sodium	MG/KG	23/ 67	459	1440	LL1ss-105-0750-SO				
LL1-006		Inorganics	Thallium	MG/KG	65/ 67	0.483	0.78	LL1ss-128-0781-SO				
LL1-006		Inorganics	Vanadium	MG/KG	67/ 67	18.1	35.8	LL1ss-206-0917-SO				
LL1-006		Inorganics	Zinc	MG/KG	67/ 67	321	2060	LL1ss-109-0755-SO				
LL1-006		Explosives	2,4,6-Trinitrotoluene	MG/KG	15/ 36	6.91	230	LL1ss-034-0766-SO				
LL1-006	Y	Explosives	2,4-Dinitrotoluene	MG/KG	8/ 36	0.864	9.3	LL1ss-034-0766-SO	0.13	1/ 36	0.0432	0.465
LL1-006		Explosives	2,6-Dinitrotoluene	MG/KG	4/ 36	0.606	0.36	LL1ss-034-0766-SO				
LL1-006		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	8/ 36	0.554	8.7	LL1ss-034-0766-SO				
LL1-006		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	7/ 36	0.696	1.9	LL1ss-034-0766-SO				
LL1-006		Explosives	4-Nitrotoluene	MG/KG	1/ 36	0.617	0.2	LL1ss-034-0766-SO				
LL1-006		Explosives	HMX	MG/KG	3/ 36	1.3	2.7	LL1ss-034-0766-SO				
LL1-006		Explosives	Nitrocellulose	MG/KG	9/ 36	24.7	512	LL1ss-099-1118-SO				
LL1-006		Explosives	RDX	MG/KG	2/ 36	2.69	34	LL1ss-099-0740-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-006		Pesticides and PCBs	4,4'-DDE	MG/KG	3/ 9	0.0385	0.088	LL1ss-130-1121-SO				
LL1-006		Pesticides and PCBs	4,4'-DDT	MG/KG	1/ 9	0.0185	0.015	LL1ss-108-1120-SO				
LL1-006		Pesticides and PCBs	Endrin aldehyde	MG/KG	3/ 9	0.0299	0.054	LL1ss-130-1121-SO				
LL1-006		Pesticides and PCBs	Endrin ketone	MG/KG	1/ 9	0.0211	0.049	LL1ss-130-1121-SO				
LL1-006	N	Pesticides and PCBs	Heptachlor	MG/KG	1/ 9	0.02	0.028	LL1ss-108-1120-SO	0.008	0/ 9	0.000999	0.0014
LL1-006		Pesticides and PCBs	PCB-1016	MG/KG	1/ 8	0.191	0.14	LL1ss-130-0783-SO				
LL1-006		Pesticides and PCBs	PCB-1254	MG/KG	6/ 9	0.8	3.1	LL1ss-130-1121-SO				
LL1-006		Pesticides and PCBs	gamma-Chlordane	MG/KG	3/ 9	0.0217	0.035	LL1ss-108-1120-SO				
LL1-006		Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	2/ 9	0.459	0.16	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Anthracene	MG/KG	2/ 9	0.435	0.073	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	4/ 9	0.423	0.41	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	4/ 9	0.42	0.37	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	4/ 9	0.445	0.47	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	4/ 9	0.4	0.24	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	2/ 9	0.459	0.21	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Carbazole	MG/KG	1/ 9	0.474	0.072	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Chrysene	MG/KG	3/ 9	0.475	0.48	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Di-n-butyl phthalate	MG/KG	2/ 9	0.566	0.79	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Fluoranthene	MG/KG	4/ 9	0.544	1	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Fluorene	MG/KG	1/ 9	0.47	0.041	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	4/ 9	0.402	0.26	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	N-Nitrosodiphenylamine	MG/KG	1/ 9	0.475	0.057	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Naphthalene	MG/KG	2/ 9	0.449	0.11	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Phenanthrene	MG/KG	4/ 9	0.445	0.45	LL1ss-024-1112-SO				
LL1-006		Semi-Volatile Organics	Pyrene	MG/KG	3/ 9	0.534	0.79	LL1ss-024-1112-SO				
LL1-006		Volatile Organics	1,2-Dichloroethene	MG/KG	6/ 9	0.00544	0.0072	LL1ss-024-0981-SO				
LL1-006		Volatile Organics	Toluene	MG/KG	1/ 9	0.00742	0.0031	LL1ss-024-1112-SO				
LL1-006	N	Volatile Organics	Trichloroethene	MG/KG	2/ 9	0.00714	0.0033	LL1ss-024-1112-SO	0.5	0/ 9	0.000357	0.000165
LL1-007		Cyanide	Cyanide	MG/KG	8/ 65	0.678	3	LL1ss-196-0905-SO				
LL1-007		Inorganics	Aluminum	MG/KG	109/ 109	10600	25800	LL1ss-117-0763-SO				
LL1-007		Inorganics	Antimony	MG/KG	15/ 109	1.33	16.2	LL1ss-386-1224-SO				
LL1-007	N	Inorganics	Arsenic	MG/KG	109/ 109	10.4	24.6	LL1ss-189-0896-SO	5	0/ 109	0.521	1.23
LL1-007	N	Inorganics	Barium	MG/KG	109/ 109	84.6	410	LL1ss-118-0764-SO	100	0/ 109	4.23	20.5
LL1-007		Inorganics	Beryllium	MG/KG	69/ 109	0.528	3.2	LL1ss-119-0765-SO				
LL1-007	N	Inorganics	Cadmium	MG/KG	82/ 109	1.08	18.6	LL1ss-128-0781-SO	1	0/ 109	0.054	0.93
LL1-007		Inorganics	Calcium	MG/KG	102/ 109	13500	221000	LL1ss-410-1228-SO				
LL1-007	Y	Inorganics	Chromium	MG/KG	109/ 109	21	385	LL1ss-412-1309-SO	5	1/ 109	1.05	19.3
LL1-007		Inorganics	Cobalt	MG/KG	109/ 109	8.86	32	LL1ss-368-1258-SO				
LL1-007		Inorganics	Copper	MG/KG	109/ 109	27.6	271	LL1ss-124-0776-SO				
LL1-007		Inorganics	Iron	MG/KG	109/ 109	20400	90000	LL1ss-410-1228-SO				

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-007	Y	Inorganics	Lead	MG/KG	109/ 109	121	2510	LL1ss-412-1309-SO	5	24/ 109	6.06	126
LL1-007		Inorganics	Magnesium	MG/KG	109/ 109	2960	20200	LL1ss-117-0763-SO				
LL1-007		Inorganics	Manganese	MG/KG	109/ 109	878	4070	LL1ss-205-0915-SO				
LL1-007	N	Inorganics	Mercury	MG/KG	97/ 109	0.0705	0.42	LL1ss-389-1307-SO	0.2	0/ 109	0.00353	0.021
LL1-007		Inorganics	Nickel	MG/KG	109/ 109	16.6	82.8	LL1ss-339-1241-SO				
LL1-007		Inorganics	Potassium	MG/KG	109/ 109	944	2160	LL1ss-119-0765-SO				
LL1-007	N	Inorganics	Selenium	MG/KG	51/ 109	0.688	1.7	LL1ss-197-0906-SO	1	0/ 109	0.0344	0.085
LL1-007	N	Inorganics	Silver	MG/KG	4/ 109	1.16	0.23	LL1ss-119-0765-SO	5	0/ 109	0.0581	0.0115
LL1-007		Inorganics	Sodium	MG/KG	27/ 109	464	1220	LL1ss-119-0765-SO				
LL1-007		Inorganics	Thallium	MG/KG	107/ 109	0.521	0.86	LL1ss-191-0898-SO				
LL1-007		Inorganics	Vanadium	MG/KG	109/ 109	19.2	46.3	LL1ss-191-0898-SO				
LL1-007		Inorganics	Zinc	MG/KG	109/ 109	164	1960	LL1ss-127-0780-SO				
LL1-007		Explosives	1,3,5-Trinitrobenzene	MG/KG	3/ 56	0.614	0.93	LL1ss-034-0766-SO				
LL1-007		Explosives	1,3-Dinitrobenzene	MG/KG	1/ 56	0.604	0.081	LL1ss-034-0766-SO				
LL1-007		Explosives	2,4,6-Trinitrotoluene	MG/KG	26/ 56	8.8	230	LL1ss-034-0766-SO				
LL1-007	N	Explosives	2,4-Dinitrotoluene	MG/KG	2/ 56	0.605	0.21	LL1ss-034-0766-SO	0.13	0/ 56	0.0302	0.0105
LL1-007		Explosives	2,6-Dinitrotoluene	MG/KG	5/ 56	0.607	0.6	LL1ss-034-0766-SO				
LL1-007		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	15/ 56	0.686	8.7	LL1ss-034-0766-SO				
LL1-007		Explosives	2-Nitrotoluene	MG/KG	1/ 56	0.614	0.22	LL1ss-034-0766-SO				
LL1-007		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	12/ 56	0.904	5.9	LL1ss-034-0766-SO				
LL1-007		Explosives	4-Nitrotoluene	MG/KG	1/ 56	0.607	0.11	LL1ss-034-0766-SO				
LL1-007		Explosives	HMX	MG/KG	3/ 56	1.25	2.2	LL1ss-034-0766-SO				
LL1-007	N	Explosives	Nitrobenzene	MG/KG	3/ 56	0.602	0.23	LL1ss-034-0766-SO	2	0/ 56	0.0301	0.0115
LL1-007		Explosives	Nitrocellulose	MG/KG	12/ 55	3.84	53.2	LL1ss-342-1243-SO				
LL1-007		Explosives	Nitroglycerin	MG/KG	1/ 56	6.16	7.4	LL1ss-034-0766-SO				
LL1-007		Explosives	RDX	MG/KG	4/ 56	1.82	27	LL1ss-371-1220-SO				
LL1-007		Pesticides and PCBs	4,4'-DDE	MG/KG	5/ 7	0.0398	0.088	LL1ss-130-1121-SO				
LL1-007		Pesticides and PCBs	4,4'-DDT	MG/KG	1/ 7	0.0119	0.015	LL1ss-130-0783-SO				
LL1-007		Pesticides and PCBs	Endrin aldehyde	MG/KG	5/ 7	0.0274	0.054	LL1ss-130-1121-SO				
LL1-007		Pesticides and PCBs	Endrin ketone	MG/KG	1/ 7	0.0152	0.049	LL1ss-130-1121-SO				
LL1-007	N	Pesticides and PCBs	Heptachlor	MG/KG	1/ 7	0.0137	0.028	LL1ss-120-0773-SO	0.008	0/ 7	0.000686	0.0014
LL1-007		Pesticides and PCBs	PCB-1254	MG/KG	5/ 7	1.27	3.1	LL1ss-130-1121-SO				
LL1-007		Pesticides and PCBs	gamma-Chlordane	MG/KG	3/ 7	0.0159	0.035	LL1ss-130-0783-SO				
LL1-007		Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	1/ 9	0.362	0.12	LL1ss-130-0783-SO				
LL1-007		Semi-Volatile Organics	Anthracene	MG/KG	3/ 9	0.296	0.21	LL1ss-193-0901-SO				
LL1-007		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	4/ 9	0.408	1	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	4/ 9	0.436	1.3	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	5/ 9	0.554	2.5	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	4/ 9	0.431	1.5	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	3/ 9	0.373	0.69	LL1ss-409-1209-SO				

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-007		Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	1/ 9	0.387	0.34	LL1ss-369-1212-SO				
LL1-007		Semi-Volatile Organics	Carbazole	MG/KG	2/ 9	0.329	0.16	LL1ss-369-1212-SO				
LL1-007		Semi-Volatile Organics	Chrysene	MG/KG	4/ 9	0.503	1.7	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Di-n-butyl phthalate	MG/KG	1/ 9	0.404	0.5	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Dibenz(a,h)anthracene	MG/KG	1/ 9	0.384	0.32	LL1ss-130-0783-SO				
LL1-007		Semi-Volatile Organics	Fluoranthene	MG/KG	6/ 9	0.568	2	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Fluorene	MG/KG	1/ 9	0.415	0.041	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	4/ 9	0.391	1.1	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Phenanthrene	MG/KG	3/ 9	0.437	0.82	LL1ss-409-1209-SO				
LL1-007		Semi-Volatile Organics	Pyrene	MG/KG	4/ 9	0.561	1.7	LL1ss-409-1209-SO				
LL1-007		Volatile Organics	1,2-Dichloroethene	MG/KG	9/ 9	0.00322	0.0048	LL1ss-346-1210-SO				
LL1-007		Volatile Organics	Toluene	MG/KG	1/ 9	0.00573	0.0044	LL1ss-193-0901-SO				
LL1-007	N	Volatile Organics	Trichloroethene	MG/KG	8/ 9	0.0041	0.0067	LL1ss-346-1210-SO	0.5	0/ 9	0.000205	0.000335
LL1-008		Cyanide	Cyanide	MG/KG	3/ 14	0.618	1	LL1ss-409-1209-SO				
LL1-008		Inorganics	Aluminum	MG/KG	45/ 45	9560	21100	LL1ss-409-1209-SO				
LL1-008		Inorganics	Antimony	MG/KG	8/ 45	1.2	2.6	LL1ss-387-1251-SO				
LL1-008	N	Inorganics	Arsenic	MG/KG	45/ 45	10.1	17.7	LL1ss-413-1323-SO	5	0/ 45	0.503	0.885
LL1-008	N	Inorganics	Barium	MG/KG	45/ 45	71.4	265	LL1ss-409-1209-SO	100	0/ 45	3.57	13.3
LL1-008		Inorganics	Beryllium	MG/KG	34/ 45	0.471	2.5	LL1ss-409-1209-SO				
LL1-008	N	Inorganics	Cadmium	MG/KG	33/ 45	0.638	3.5	LL1ss-357-1313-SO	1	0/ 45	0.0319	0.175
LL1-008		Inorganics	Calcium	MG/KG	45/ 45	12700	221000	LL1ss-410-1228-SO				
LL1-008	Y	Inorganics	Chromium	MG/KG	45/ 45	25.7	385	LL1ss-412-1309-SO	5	1/ 45	1.29	19.3
LL1-008		Inorganics	Cobalt	MG/KG	45/ 45	7.63	18.2	LL1ss-412-1309-SO				
LL1-008		Inorganics	Copper	MG/KG	45/ 45	25.2	191	LL1ss-388-1306-SO				
LL1-008		Inorganics	Iron	MG/KG	45/ 45	21100	90000	LL1ss-410-1228-SO				
LL1-008	Y	Inorganics	Lead	MG/KG	45/ 45	146	2510	LL1ss-412-1309-SO	5	12/ 45	7.32	126
LL1-008		Inorganics	Magnesium	MG/KG	45/ 45	2390	13200	LL1ss-409-1209-SO				
LL1-008		Inorganics	Manganese	MG/KG	45/ 45	633	3350	LL1ss-409-1209-SO				
LL1-008	N	Inorganics	Mercury	MG/KG	35/ 45	0.0839	0.42	LL1ss-389-1307-SO	0.2	0/ 45	0.00419	0.021
LL1-008		Inorganics	Nickel	MG/KG	45/ 45	16.6	82.8	LL1ss-339-1241-SO				
LL1-008		Inorganics	Potassium	MG/KG	45/ 45	985	1760	LL1ss-409-1209-SO				
LL1-008	N	Inorganics	Selenium	MG/KG	27/ 45	0.784	2.1	LL1ss-359-1315-SO	1	0/ 45	0.0392	0.105
LL1-008	N	Inorganics	Silver	MG/KG	1/ 45	1.13	0.21	LL1ss-251-0978-SO	5	0/ 45	0.0563	0.0105
LL1-008		Inorganics	Sodium	MG/KG	15/ 45	376	888	LL1ss-342-1243-SO				
LL1-008		Inorganics	Thallium	MG/KG	45/ 45	0.488	0.69	LL1ss-358-1314-SO				
LL1-008		Inorganics	Vanadium	MG/KG	45/ 45	18.3	34.2	LL1ss-350-1304-SO				
LL1-008		Inorganics	Zinc	MG/KG	45/ 45	116	933	LL1ss-412-1309-SO				
LL1-008		Explosives	1,3,5-Trinitrobenzene	MG/KG	4/ 21	5.82	110	LL1ss-357-1313-SO				
LL1-008		Explosives	1,3-Dinitrobenzene	MG/KG	2/ 21	5.79	110	LL1ss-357-1313-SO				
LL1-008		Explosives	2,4,6-Trinitrotoluene	MG/KG	13/ 21	240	4800	LL1ss-357-1313-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-008	N	Explosives	2,4-Dinitrotoluene	MG/KG	2/ 21	12.5	0.21	LL1ss-357-1313-SO	0.13	0/ 21	0.623	0.0105
LL1-008		Explosives	2,6-Dinitrotoluene	MG/KG	1/ 21	12.5	0.26	LL1ss-357-1313-SO				
LL1-008		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	5/ 21	12.7	3.2	LL1ss-357-1313-SO				
LL1-008		Explosives	2-Nitrotoluene	MG/KG	1/ 21	12.5	0.22	LL1ss-357-1313-SO				
LL1-008		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	7/ 21	13	5.9	LL1ss-357-1313-SO				
LL1-008		Explosives	4-Nitrotoluene	MG/KG	1/ 21	12.5	0.11	LL1ss-357-1313-SO				
LL1-008		Explosives	HMX	MG/KG	2/ 21	25	1.2	LL1ss-357-1313-SO				
LL1-008	N	Explosives	Nitrobenzene	MG/KG	3/ 21	12.4	0.23	LL1ss-357-1313-SO	2	0/ 21	0.622	0.0115
LL1-008		Explosives	Nitrocellulose	MG/KG	9/ 21	6.58	53.2	LL1ss-342-1243-SO				
LL1-008		Explosives	Nitroglycerin	MG/KG	1/ 21	125	7.4	LL1ss-357-1313-SO				
LL1-008		Explosives	RDX	MG/KG	5/ 21	58.6	1200	LL1ss-357-1313-SO				
LL1-008		Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	1/ 2	0.25	0.12	LL1ss-346-1210-SO				
LL1-008		Semi-Volatile Organics	Anthracene	MG/KG	1/ 2	0.295	0.21	LL1ss-346-1210-SO				
LL1-008		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	1/ 2	0.69	1	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	1/ 2	0.84	1.3	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	1/ 2	1.44	2.5	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	1/ 2	0.94	1.5	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	1/ 2	0.535	0.69	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	1/ 2	0.36	0.34	LL1ss-346-1210-SO				
LL1-008		Semi-Volatile Organics	Carbazole	MG/KG	1/ 2	0.27	0.16	LL1ss-346-1210-SO				
LL1-008		Semi-Volatile Organics	Chrysene	MG/KG	1/ 2	1.04	1.7	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Di-n-butyl phthalate	MG/KG	1/ 2	0.44	0.5	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Dibenz(a,h)anthracene	MG/KG	1/ 2	0.35	0.32	LL1ss-346-1210-SO				
LL1-008		Semi-Volatile Organics	Fluoranthene	MG/KG	1/ 2	1.19	2	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	1/ 2	0.74	1.1	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Phenanthrene	MG/KG	1/ 2	0.6	0.82	LL1ss-409-1209-SO				
LL1-008		Semi-Volatile Organics	Pyrene	MG/KG	1/ 2	1.04	1.7	LL1ss-409-1209-SO				
LL1-008		Volatile Organics	1,2-Dichloroethene	MG/KG	2/ 2	0.00276	0.0048	LL1ss-346-1210-SO				
LL1-008	N	Volatile Organics	Trichloroethene	MG/KG	2/ 2	0.00555	0.0067	LL1ss-346-1210-SO	0.5	0/ 2	0.000278	0.000335
LL1-009		Cyanide	Cyanide	MG/KG	1/ 3	0.677	0.8	LL1ss-357-1313-SO				
LL1-009		Inorganics	Aluminum	MG/KG	33/ 33	10700	16400	LL1ss-418-1346-SO				
LL1-009		Inorganics	Antimony	MG/KG	7/ 33	1.08	1.3	LL1ss-405-1217-SO				
LL1-009	N	Inorganics	Arsenic	MG/KG	33/ 33	10.8	18.3	LL1ss-414-1334-SO	5	0/ 33	0.538	0.915
LL1-009	N	Inorganics	Barium	MG/KG	33/ 33	75.5	150	LL1ss-340-1328-SO	100	0/ 33	3.78	7.5
LL1-009		Inorganics	Beryllium	MG/KG	30/ 33	0.477	0.72	LL1ss-348-1330-SO				
LL1-009	N	Inorganics	Cadmium	MG/KG	24/ 33	0.735	6.3	LL1ss-340-1328-SO	1	0/ 33	0.0367	0.315
LL1-009		Inorganics	Calcium	MG/KG	33/ 33	3890	19900	LL1ss-245-1326-SO				
LL1-009	N	Inorganics	Chromium	MG/KG	33/ 33	16.4	37	LL1ss-418-1346-SO	5	0/ 33	0.82	1.85
LL1-009		Inorganics	Cobalt	MG/KG	33/ 33	9.08	19.9	LL1ss-415-1335-SO				
LL1-009		Inorganics	Copper	MG/KG	33/ 33	17.9	46.1	LL1ss-341-1329-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-009		Inorganics	Iron	MG/KG	33/ 33	22700	42000	LL1ss-348-1330-SO				
LL1-009	Y	Inorganics	Lead	MG/KG	33/ 33	72.6	636	LL1ss-356-1312-SO	5	6/ 33	3.63	31.8
LL1-009		Inorganics	Magnesium	MG/KG	33/ 33	2100	3840	LL1ss-414-1334-SO				
LL1-009		Inorganics	Manganese	MG/KG	33/ 33	772	1830	LL1ss-340-1328-SO				
LL1-009	N	Inorganics	Mercury	MG/KG	31/ 33	0.0778	0.3	LL1ss-340-1328-SO	0.2	0/ 33	0.00389	0.015
LL1-009		Inorganics	Nickel	MG/KG	33/ 33	16.4	29.7	LL1ss-414-1334-SO				
LL1-009		Inorganics	Potassium	MG/KG	33/ 33	1030	1960	LL1ss-349-1331-SO				
LL1-009	N	Inorganics	Selenium	MG/KG	27/ 33	0.84	2.1	LL1ss-359-1315-SO	1	0/ 33	0.042	0.105
LL1-009		Inorganics	Sodium	MG/KG	9/ 33	451	545	LL1ss-406-1280-SO				
LL1-009		Inorganics	Thallium	MG/KG	30/ 33	0.506	0.69	LL1ss-358-1314-SO				
LL1-009		Inorganics	Vanadium	MG/KG	33/ 33	20.9	33.7	LL1ss-359-1315-SO				
LL1-009		Inorganics	Zinc	MG/KG	33/ 33	99.4	602	LL1ss-340-1328-SO				
LL1-009		Explosives	1,3,5-Trinitrobenzene	MG/KG	1/ 19	9.59	110	LL1ss-357-1313-SO				
LL1-009		Explosives	1,3-Dinitrobenzene	MG/KG	1/ 19	9.59	110	LL1ss-357-1313-SO				
LL1-009		Explosives	2,4,6-Trinitrotoluene	MG/KG	7/ 19	332	4800	LL1ss-357-1313-SO				
LL1-009		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	4/ 19	16.9	6.9	LL1ss-357-1313-SO				
LL1-009		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	1/ 19	19.2	0.14	LL1ss-357-1313-SO				
LL1-009		Explosives	Nitrocellulose	MG/KG	4/ 19	6.48	42.2	LL1ss-357-1313-SO				
LL1-009		Explosives	Nitroguanidine	MG/KG	1/ 19	0.976	0.035	LL1ss-357-1313-SO				
LL1-009		Explosives	RDX	MG/KG	2/ 19	70.8	1200	LL1ss-357-1313-SO				
LL1-012		General Chemistry	Chromium, hexavalent	MG/KG	1/ 9	4.03	15.5	LL1ss-024-1112-SO				
LL1-012		Cyanide	Cyanide	MG/KG	6/ 26	0.979	3.8	LL1ss-095-0734-SO				
LL1-012		Inorganics	Aluminum	MG/KG	30/ 30	12800	97300	LL1ss-095-0734-SO				
LL1-012		Inorganics	Antimony	MG/KG	7/ 30	1.41	1.8	LL1ss-095-0734-SO				
LL1-012	Y	Inorganics	Arsenic	MG/KG	30/ 30	13.3	112	LL1ss-095-0734-SO	5	1/ 30	0.663	5.6
LL1-012	N	Inorganics	Barium	MG/KG	30/ 30	109	572	LL1ss-095-0734-SO	100	0/ 30	5.47	28.6
LL1-012		Inorganics	Beryllium	MG/KG	16/ 30	0.735	3.3	LL1ss-095-0734-SO				
LL1-012	Y	Inorganics	Cadmium	MG/KG	24/ 30	1.94	27.3	LL1ss-186-0893-SO	1	1/ 30	0.0968	1.37
LL1-012		Inorganics	Calcium	MG/KG	30/ 30	17200	162000	LL1ss-118-0764-SO				
LL1-012	Y	Inorganics	Chromium	MG/KG	30/ 30	18.2	128	LL1ss-095-0734-SO	5	1/ 30	0.909	6.4
LL1-012		Inorganics	Cobalt	MG/KG	30/ 30	9.46	72.3	LL1ss-095-0734-SO				
LL1-012		Inorganics	Copper	MG/KG	30/ 30	174	2180	LL1ss-024-0981-SO				
LL1-012		Inorganics	Iron	MG/KG	30/ 30	23900	198000	LL1ss-095-0734-SO				
LL1-012	Y	Inorganics	Lead	MG/KG	30/ 30	168	2070	LL1ss-014-0839-SO	5	10/ 30	8.41	104
LL1-012		Inorganics	Magnesium	MG/KG	30/ 30	3890	21100	LL1ss-095-0734-SO				
LL1-012		Inorganics	Manganese	MG/KG	30/ 30	968	4700	LL1ss-095-0734-SO				
LL1-012	N	Inorganics	Mercury	MG/KG	27/ 30	0.0879	0.46	LL1ss-001-0800-SO	0.2	0/ 30	0.0044	0.023
LL1-012		Inorganics	Nickel	MG/KG	30/ 30	19	160	LL1ss-095-0734-SO				
LL1-012		Inorganics	Potassium	MG/KG	30/ 30	1340	11600	LL1ss-095-0734-SO				
LL1-012	N	Inorganics	Selenium	MG/KG	16/ 30	1.15	5.3	LL1ss-024-0981-SO	1	0/ 30	0.0577	0.265

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-012		Inorganics	Sodium	MG/KG	9/ 30	439	1630	LL1ss-095-0734-SO				
LL1-012		Inorganics	Thallium	MG/KG	28/ 30	0.595	4.6	LL1ss-095-0734-SO				
LL1-012		Inorganics	Vanadium	MG/KG	30/ 30	21.2	179	LL1ss-095-0734-SO				
LL1-012		Inorganics	Zinc	MG/KG	30/ 30	226	1110	LL1ss-011-0837-SO				
LL1-012		Explosives	1,3,5-Trinitrobenzene	MG/KG	2/ 17	0.574	4	LL1ss-001-0800-SO				
LL1-012		Explosives	2,4,6-Trinitrotoluene	MG/KG	10/ 17	21.8	310	LL1ss-001-0800-SO				
LL1-012	N	Explosives	2,4-Dinitrotoluene	MG/KG	2/ 17	0.952	0.46	LL1ss-001-0800-SO	0.13	0/ 17	0.0476	0.023
LL1-012		Explosives	2-Amino-4,6-dinitrotoluene	MG/KG	9/ 17	0.931	7.9	LL1ss-001-0800-SO				
LL1-012		Explosives	2-Nitrotoluene	MG/KG	1/ 17	0.905	0.69	LL1ss-001-0800-SO				
LL1-012		Explosives	3-Nitrotoluene	MG/KG	1/ 17	0.931	0.18	LL1ss-001-0800-SO				
LL1-012		Explosives	4-Amino-2,6-dinitrotoluene	MG/KG	3/ 17	1.37	2.7	LL1ss-001-0800-SO				
LL1-012		Explosives	HMX	MG/KG	3/ 17	2.15	5	LL1ss-001-0800-SO				
LL1-012		Explosives	Nitrocellulose	MG/KG	10/ 17	7.17	53.4	LL1ss-011-0837-SO				
LL1-012		Explosives	RDX	MG/KG	4/ 17	4.06	39	LL1ss-011-0837-SO				
LL1-012		Pesticides and PCBs	4,4'-DDE	MG/KG	6/ 15	0.0806	0.85	LL1ss-001-0800-SO				
LL1-012		Pesticides and PCBs	4,4'-DDT	MG/KG	1/ 15	0.0203	0.015	LL1ss-001-0800-SO				
LL1-012		Pesticides and PCBs	Endrin aldehyde	MG/KG	5/ 15	0.0427	0.34	LL1ss-001-0800-SO				
LL1-012	Y	Pesticides and PCBs	Heptachlor	MG/KG	3/ 15	0.0361	0.32	LL1ss-001-0800-SO	0.008	1/ 15	0.00181	0.016
LL1-012	N	Pesticides and PCBs	Methoxychlor	MG/KG	1/ 15	0.0397	0.014	LL1ss-001-0800-SO	10	0/ 15	0.00199	0.0007
LL1-012		Pesticides and PCBs	PCB-1016	MG/KG	1/ 14	0.171	0.14	LL1ss-001-0800-SO				
LL1-012		Pesticides and PCBs	PCB-1254	MG/KG	10/ 15	1.01	8.9	LL1ss-001-0800-SO				
LL1-012		Pesticides and PCBs	gamma-Chlordane	MG/KG	3/ 15	0.0255	0.17	LL1ss-001-0800-SO				
LL1-012	N	Semi-Volatile Organics	2,4-Dinitrotoluene	MG/KG	1/ 15	0.506	0.053	LL1ss-001-0800-SO	0.13	0/ 15	0.0253	0.00265
LL1-012		Semi-Volatile Organics	2-Methylnaphthalene	MG/KG	3/ 15	0.475	0.16	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Acenaphthene	MG/KG	1/ 15	0.517	0.23	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Anthracene	MG/KG	2/ 15	0.445	0.55	LL1ss-024-1112-SO				
LL1-012		Semi-Volatile Organics	Benz(a)anthracene	MG/KG	5/ 15	0.483	1.2	LL1ss-168-0862-SO				
LL1-012		Semi-Volatile Organics	Benzo(a)pyrene	MG/KG	5/ 15	0.461	1	LL1ss-024-1112-SO				
LL1-012		Semi-Volatile Organics	Benzo(b)fluoranthene	MG/KG	7/ 15	0.469	1.4	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Benzo(ghi)perylene	MG/KG	5/ 15	0.4	0.55	LL1ss-024-1112-SO				
LL1-012		Semi-Volatile Organics	Benzo(k)fluoranthene	MG/KG	2/ 15	0.469	0.58	LL1ss-024-1112-SO				
LL1-012		Semi-Volatile Organics	Bis(2-ethylhexyl)phthalate	MG/KG	2/ 15	0.488	0.081	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Carbazole	MG/KG	1/ 15	0.527	0.38	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Chrysene	MG/KG	4/ 15	0.501	1.1	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Di-n-butyl phthalate	MG/KG	2/ 15	0.56	0.79	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Dibenz(a,h)anthracene	MG/KG	1/ 15	0.508	0.096	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Dibenzofuran	MG/KG	1/ 15	0.514	0.19	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Fluoranthene	MG/KG	7/ 15	0.655	2.9	LL1ss-168-0862-SO				
LL1-012		Semi-Volatile Organics	Fluorene	MG/KG	1/ 15	0.522	0.31	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Indeno(1,2,3-cd)pyrene	MG/KG	5/ 15	0.406	0.62	LL1ss-024-1112-SO				

Attachment 1. RVAAP LL-1 Soil IDW Summary

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1-012		Semi-Volatile Organics	N-Nitrosodiphenylamine	MG/KG	1/ 15	0.506	0.057	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Naphthalene	MG/KG	3/ 15	0.479	0.22	LL1ss-001-0800-SO				
LL1-012		Semi-Volatile Organics	Phenanthrene	MG/KG	6/ 15	0.545	2.5	LL1ss-168-0862-SO				
LL1-012		Semi-Volatile Organics	Pyrene	MG/KG	5/ 15	0.62	2.3	LL1ss-168-0862-SO				
LL1-012		Total Organic Carbon	Total Organic Carbon	MG/KG	1/ 1	2600	2600	LL1ss-038-0735-SO				
LL1-012		Volatile Organics	1,2-Dichloroethene	MG/KG	12/ 15	0.00689	0.018	LL1ss-001-0800-SO				
LL1-012		Volatile Organics	Acetone	MG/KG	2/ 15	0.013	0.0086	LL1ss-024-1112-SO				
LL1-012		Volatile Organics	Methylene chloride	MG/KG	1/ 15	0.00656	0.0022	LL1ss-024-1112-SO				
LL1-012		Volatile Organics	Toluene	MG/KG	1/ 15	0.00658	0.0031	LL1ss-024-1112-SO				
LL1-012	N	Volatile Organics	Trichloroethene	MG/KG	1/ 15	0.00662	0.0033	LL1ss-024-1112-SO	0.5	0/ 15	0.000331	0.000165

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Science Applications International Corporation
An Employee-Owned Company

January 24, 2001

Mr. Walter Perro
U.S. Army Corps of Engineers
Louisville District
ATTN: CEORL-ED-GE
600 Martin Luther King, Jr. Place
Louisville, KY 40201-0059

SUBJECT: **Contract No. DACA27-97-D-0025, Delivery Order 0003, Phase II Remedial Investigation at Load Line 1, at the Ravenna Army Ammunition Plant, Ravenna, Ohio**

RE: **Deliverable -- Investigation-Derived Waste Characterization and Disposal Report**

Dear Mr. Perro:

Investigative activities conducted during the Phase II Remedial Investigation (RI) of Load Line 1 (September and October 2000) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, resulted in the generation of investigation-derived waste (IDW) consisting of soil, water, and field laboratory reagents. The IDW was generated in the course of sampling of soils and groundwater, field analysis of explosives, and decontamination of sampling equipment. The purpose of this letter report is to characterize and classify four drums, two containing decontamination fluids, and two containing groundwater, for disposal. The characterization and classification of the remaining soil containers will be completed in separate letter reports to be submitted at a later date pending verification of the analytical results for environmental samples used for characterization.

This report includes a summary of IDW generated and its origin (Table 1), comparisons of characterization sampling results to regulatory criteria (Table 2), and classification of the liquid IDW and recommendations for disposal (Table 3). This document follows guidance established by the Facility-Wide Sampling and Analysis Plan (USACE 1996), the Phase II RI Work Plan Addendum No. 2 for Load Line 1 (USACE 2000), and the Ohio EPA (November 1997) regarding IDW disposition at RVAAP.

1901 South Riverside Drive ❖ Tulsa, Oklahoma ❖ 74119 ❖ 918.625.7614

Table 1. Summary of Load Line 1 Phase II RI IDW

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
DECON-001	55-gallon closed-top	potable wash/rinse water; full	9/11 to 9/28/00
LL1-005	55-gallon closed-top	decontamination solvent rinse; 2/3 full	9/20 to 10/4/00
LL1-010	55-gallon closed-top	purge water from monitoring wells; full	10/1 to 10/4/00
LL1-011	55-gallon closed-top	purge water from monitoring wells; 20 gal	10/4/00

For the characterization of the liquids as hazardous or non-hazardous, waste characterization samples were collected from each of the two decontamination-fluid drums. A composite sample was collected from LL1-010 and LL1-011. The samples were analyzed for TCLP metals, pH, and ignitability. The analytical results above detection limits for the samples are compared directly to the regulatory limits to determine a waste characterization, as shown in Table 2. The TCLP results are attached to this letter.

Table 2. Comparison of TCLP Waste Characterization Results for Load Line 1 to TCLP Criteria

Drum I.D.	Chemical	TCLP Result (mg/L)	TCLP Criterion (mg/L)	TCLP Pass/Fail
LL1-010/-011	Barium	0.16	100	P
	Chromium	0.071	5	P
LL1-005	Barium	0.41	100	P
	Cadmium	0.18	1	P
	Chromium	0.19	5	P
	Lead	0.052	5	P
DECON-001	Barium	0.78	100	P
	Chromium	0.029	5	P
	Lead	0.089	5	P

For the additional characterization of purge water as hazardous or non-hazardous with respect to explosives and other organic compounds, the Resource Conservation and Recovery Act (RCRA) regulatory limits are compared to the mean and maximum contaminant levels as presented in Attachment 1. Table 7-1 of the Facility-Wide SAP shows the maximum concentration of contaminants for the toxicity characteristic for hazardous wastes per 40 CFR 261.24. Analytical results for the correlative filtered groundwater samples are compared

with these criteria to determine whether any wastes are potentially hazardous. All containers of groundwater IDW that are determined to be potentially RCRA-hazardous will be additionally sampled for TCLP analysis before disposal.

Attachment 1 shows that the maximum detects of all explosives, volatile organic compounds, semi-volatile organic compounds, and pesticides/PCBs in groundwater were below TCLP criteria.

The drums are classified as non-hazardous contaminated waste based upon TCLP metals analyses of the liquid, and the analytical data for explosives and other organic compounds, as shown in Table 3 and Attachment 1. The liquid IDW contains trace amounts of barium, chromium, and lead, as well as explosives, nitroglycerine, and volatile organic compounds in trace amounts. These containers are recommended for off-site disposal at a licensed disposal facility.

Table 3. Summary of Final Waste Classification and Recommended Disposal Options

Non-Hazardous Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
DECON-001	Water	metals	Permitted Facility
LL1-005	Water	metals	Permitted Facility
LL1-010	Water	metals	Permitted Facility
LL1-011	Water	metals	Permitted Facility

Please provide your concurrence or direction concerning the enclosed waste characterization and disposal recommendations. Following your direction and immediate approval, we will proceed with the appropriate waste. Disposal will be scheduled to coincide with the disposal of drums from other SAIC activities at RVAAP in February.

If you have any questions or require additional information, please do not hesitate to contact me at 918-625-7614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathy Dominic

Kathy Dominic
Environmental Projects Manager

CC: John Jent, USACE
Eileen Mohr, Ohio EPA
Mark Patterson, RVAAP
Kevin Jago, SAIC
Steve Selecman, SAIC

Attachment 1. RVAAP LL1 Liquid IDW

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP
LL1-010		Inorganics	Aluminum*	MG/L	2/ 11	0.363	1.7	LL1mw-084-1090-GW		
LL1-010		Inorganics	Antimony*	MG/L	2/ 11	0.00463	0.0037	LL1mw-064-1081-GW		
LL1-010		Inorganics	Barium*	MG/L	11/ 11	0.0264	0.062	LL1mw-065-1082-GW	100	0/ 11
LL1-010	N	Inorganics	Cadmium*	MG/L	2/ 11	0.00446	0.003	LL1mw-065-1082-GW	1	0/ 11
LL1-010	N	Inorganics	Calcium*	MG/L	11/ 11	42.6	78.4	LL1mw-065-1145-GW		
LL1-010		Inorganics	Cobalt*	MG/L	8/ 11	0.0186	0.022	LL1mw-059-1078-GW		
LL1-010		Inorganics	Copper*	MG/L	1/ 11	0.0244	0.018	LL1mw-065-1145-GW		
LL1-010		Inorganics	Iron*	MG/L	6/ 11	1.07	9	LL1mw-082-1088-GW		
LL1-010		Inorganics	Magnesium*	MG/L	11/ 11	10	17.2	LL1mw-065-1145-GW		
LL1-010		Inorganics	Manganese*	MG/L	11/ 11	0.603	2.2	LL1mw-081-1087-GW		
LL1-010		Inorganics	Nickel*	MG/L	7/ 11	0.029	0.048	LL1mw-079-1085-GW		
LL1-010		Inorganics	Potassium*	MG/L	10/ 11	1.94	4	LL1mw-078-1084-GW		
LL1-010		Inorganics	Sodium*	MG/L	11/ 11	7.61	30.9	LL1mw-083-1089-GW		
LL1-010		Inorganics	Zinc*	MG/L	9/ 11	0.259	0.71	LL1mw-060-1079-GW		
LL1-010		Explosives	1,3,5-Trinitrobenzene	MG/L	4/ 11	0.00228	0.012	LL1mw-083-1089-GW		
LL1-010		Explosives	1,3-Dinitrobenzene	MG/L	3/ 11	0.000241	0.00079	LL1mw-084-1090-GW		
LL1-010		Explosives	2,4,6-Trinitrotoluene	MG/L	3/ 11	0.00242	0.016	LL1mw-084-1090-GW		
LL1-010	N	Explosives	2,4-Dinitrotoluene	MG/L	5/ 11	0.000978	0.0051	LL1mw-084-1090-GW	0.13	0/ 11
LL1-010		Explosives	2-Amino-4,6-dinitrotoluene	MG/L	6/ 11	0.00502	0.029	LL1mw-083-1089-GW		
LL1-010		Explosives	4-Amino-2,6-dinitrotoluene	MG/L	6/ 11	0.0048	0.025	LL1mw-083-1089-GW		
LL1-010		Explosives	Nitroglycerin	MG/L	1/ 11	0.00397	0.0042	LL1mw-083-1089-GW		
LL1-010		Explosives	RDX	MG/L	4/ 11	0.00081	0.0028	LL1mw-081-1087-GW		
LL1-010		Pesticides and PCBs	4,4'-DDE	MG/L	1/ 11	0.00127	0.013	LL1mw-083-1089-GW		
LL1-010	N	Semi-Volatile Organics	2,4-Dinitrotoluene	MG/L	2/ 11	0.00864	0.003	LL1mw-065-1145-GW	0.13	0/ 11
LL1-010		Volatile Organics	Methylene chloride	MG/L	6/ 11	0.00353	0.0025	LL1mw-083-1089-GW		
LL1-010		Volatile Organics	Toluene	MG/L	2/ 11	0.00425	0.001	LL1mw-064-1081-GW		
LL1-011	N	Inorganics	Arsenic*	MG/L	1/ 3	0.00767	0.013	LL1mw-085-1091-GW	5	0/ 3
LL1-011	N	Inorganics	Barium*	MG/L	3/ 3	0.033	0.057	LL1mw-080-1086-GW	100	0/ 3
LL1-011		Inorganics	Calcium*	MG/L	3/ 3	93.8	150	LL1mw-080-1086-GW		
LL1-011		Inorganics	Cobalt*	MG/L	2/ 3	0.0188	0.0049	LL1mw-067-1083-GW		
LL1-011		Inorganics	Iron*	MG/L	1/ 3	0.767	2.1	LL1mw-085-1091-GW		
LL1-011		Inorganics	Magnesium*	MG/L	3/ 3	14.9	23.3	LL1mw-085-1091-GW		
LL1-011		Inorganics	Manganese*	MG/L	3/ 3	0.59	0.88	LL1mw-085-1091-GW		
LL1-011		Inorganics	Nickel*	MG/L	3/ 3	0.0261	0.049	LL1mw-067-1083-GW		
LL1-011		Inorganics	Potassium*	MG/L	3/ 3	2.8	4.6	LL1mw-080-1086-GW		

Drum ID	Max > TCLP	Analysis Type	Chemical	Units	Proportion Detected	Mean	Max Detect	ID of Max Concentration	TCLP Criteria (mg/L)	Proportion >TCLP
LL1-011		Inorganics	Sodium*	MG/L	3/ 3	2.63	3.7	LL1mw-080-1086-GW		
LL1-011		Inorganics	Zinc*	MG/L	2/ 3	0.154	0.43	LL1mw-080-1086-GW		
LL1-011		Explosives	1,3,5-Trinitrobenzene	MG/L	1/ 3	0.000967	0.0025	LL1mw-080-1086-GW		
LL1-011		Explosives	1,3-Dinitrobenzene	MG/L	2/ 3	0.000401	0.00095	LL1mw-080-1086-GW		
LL1-011		Explosives	2,4,6-Trinitrotoluene	MG/L	1/ 3	0.00133	0.0036	LL1mw-080-1086-GW		
LL1-011	N	Explosives	2,4-Dinitrotoluene	MG/L	2/ 3	0.000364	0.0009	LL1mw-080-1086-GW	0.13	0/ 3
LL1-011		Explosives	2-Amino-4,6-dinitrotoluene	MG/L	1/ 3	0.00347	0.01	LL1mw-080-1086-GW		
LL1-011		Explosives	3-Nitrotoluene	MG/L	1/ 3	0.000787	0.00016	LL1mw-080-1086-GW		
LL1-011		Explosives	4-Amino-2,6-dinitrotoluene	MG/L	1/ 3	0.00347	0.01	LL1mw-080-1086-GW		
LL1-011		Explosives	HMX	MG/L	1/ 3	0.00433	0.012	LL1mw-080-1086-GW		
LL1-011		Explosives	Nitroglycerin	MG/L	1/ 3	0.0107	0.027	LL1mw-080-1086-GW		
LL1-011		Explosives	RDX	MG/L	1/ 3	0.0297	0.088	LL1mw-080-1086-GW		
LL1-011		Volatile Organics	Methylene chloride	MG/L	3/ 3	0.00243	0.0027	LL1mw-067-1083-GW		
*Note that all samples for metals were filtered before analysis.										

ENVIRONMENTAL CONTROL LABORATORIES INC.

Amos Wieneke
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0011-13005
Received Date: 11/13/00
Report Date: 11/21/00

Purchase Order #:

Subject: RVAAP/SAIC

Sample No: 001
Client I.D. LL1 MW Purge Water
Sample Date: 11/08/2000
Matrix: Liquid

TCLP Extract*: 11/14/2000

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/17/00
Arsenic	6010B	0.20	BDL	mg/L	11/17/00
Barium	6010B	0.020	0.16	mg/L	11/17/00
Cadmium	6010B	0.020	BDL	mg/L	11/17/00
Chromium	6010B	0.010	0.071	mg/L	11/17/00
Lead	6010B	0.050	BDL	mg/L	11/17/00
Mercury	7470A	0.0002	BDL	mg/L	11/16/00
Selenium	6010B	0.20	BDL	mg/L	11/17/00
Silver	6010B	0.010	BDL	mg/L	11/17/00

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44149
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

Amos Wieneke
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0011-13005
Received Date: 11/13/00
Report Date: 11/21/00

Purchase Order #:

Subject: RVAAP/SAIC

Sample No: 001
Client I.D. LL1 MW Purge Water
Sample Date: 11/08/2000
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
pH	9045C		5.8	S.U.	11/21/00
Flash Point	1010		> 200	DEG F	11/20/00

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Amos Wieneke
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0011-13005
Received Date: 11/13/00
Report Date: 11/21/00

Purchase Order #:

Subject: RVAAP/SAIC

Sample No: 004
Client I.D. LL1 Decon Solvents
Sample Date: 11/08/2000
Matrix: Liquid

TCLP Extract*: 11/14/2000

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/17/00
Arsenic	6010B	0.20	BDL	mg/L	11/17/00
Barium	6010B	0.020	0.41	mg/L	11/17/00
Cadmium	6010B	0.020	0.18	mg/L	11/17/00
Chromium	6010B	0.010	0.19	mg/L	11/17/00
Lead	6010B	0.050	0.052	mg/L	11/17/00
Mercury	7470A	0.0002	BDL	mg/L	11/16/00
Selenium	6010B	0.20	BDL	mg/L	11/17/00
Silver	6010B	0.010	BDL	mg/L	11/17/00

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Amos Wieneke
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0011-13005
Received Date: 11/13/00
Report Date: 11/21/00

Purchase Order #:

Subject: RVAAP/SAIC

Sample No: 004
Client I.D. LL1 Decon Solvents
Sample Date: 11/08/2000
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
pH	9045C		2.7	S.U.	11/21/00
Flash Point	1010		147	DEG F	11/20/00

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44149
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

Amos Wieneke
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: C011-13005
Received Date: 11/13/00
Report Date: 11/21/00

Purchase Order #:

Subject: RVAAP/SAIC

Sample No: 005
Client I.D. LL1 Decon Water
Sample Date: 11/08/2000
Matrix: Liquid

TCLP Extract*: 11/14/2000

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/17/00
Arsenic	6010B	0.20	BDL	mg/L	11/17/00
Barium	6010B	0.020	0.78	mg/L	11/17/00
Cadmium	6010B	0.020	BDL	mg/L	11/17/00
Chromium	6010B	0.010	0.029	mg/L	11/17/00
Lead	6010B	0.050	0.089	mg/L	11/17/00
Mercury	7470A	0.0002	BDL	mg/L	11/16/00
Selenium	6010B	0.20	BDL	mg/L	11/17/00
Silver	6010B	0.010	BDL	mg/L	11/17/00

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Amos Wieneke
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 0011-13005
Received Date: 11/13/00
Report Date: 11/21/00

Purchase Order #:

Subject: RVAAP/SAIC

Sample No: 005
Client I.D. LL1 Decon Water
Sample Date: 11/08/2000
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
pH	9045C		7.3	S.U.	11/21/00
Flash Point	1010		> 200	DEG F	11/20/00

Note:BDL(Below Detection Limit)

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(440) 238-6100 FAX: (440) 238-6294

Science Applications International Corporation
An Employee-Owned Company

December 10, 1999

Mr. John Jent
U.S. Army Corps of Engineers
Louisville District
ATTN: CEORL-ED-GE
600 Martin Luther King, Jr. Place
Louisville, KY 40201-0059

SUBJECT: **Contract No. DACA27-97-D-0025, Delivery Order No. 05, Phase II Remedial Investigation at Load Line 1 at the Ravenna Army Ammunition Plant, Ravenna, Ohio**

RE: **Deliverable – Investigation-Derived Waste Characterization and Disposal Report**

Dear Mr. Jent:

Investigative activities conducted during the Phase I RI of Load Line 1 (September 1999) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, resulted in the generation of investigation-derived waste (IDW) consisting of soil/rock cuttings, decontamination wash/rinse water, and groundwater development/purge water. The IDW was generated during installation and sampling of monitoring wells and decontamination of drilling equipment. The purpose of this letter report is to characterize and classify the IDW for future disposal.

This report includes a summary of the IDW generated and its origin (Table 1), a comparison of characterization sampling results to regulatory criteria (Table 2), and classification of the IDW and recommendations for its disposal (Table 3). A review of the analytical results used for additional waste characterization is provided in Attachment 1. This document follows guidance established by the Facility-Wide Sampling and Analysis Plan (SAP) (USACE 1996) and Load Line 1 Phase II RI Addendum No. 1 (USACE 1999) and the Ohio EPA (November 1997) regarding IDW disposition at RVAAP.

Table 1. Summary of Load Line 1 Phase II RI IDW

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
SPILL DEBRIS-01	open-top 55-gal	sorbent pads, PPE, plastic sheeting; 2/3 full	8/17/99
LLmw85-01	open-top 55-gal	Unsaturated soil cuttings; 2/3 full	8/17/99
LLmw85-02	open-top 55-gal	saturated soil cuttings; 2/3 full	8/18/99
LLmw85-03	open-top 55-gal	saturated soil cuttings; full	8/21/99
LL1mw85-TANK1	1500-gal polytank	development water; 400 gal	8/27/99
LL1mw80-01	open-top 55-gal	saturated & unsaturated soil cuttings; 2/3 full	8/18/99
LL1mw80-TANK1	1500-gal polytank	development water; 700 gal	8/27 to 9/2/99
LL1mw79-01	open-top 55-gal	saturated soil cuttings; full	8/19/99
LL1mw79-02	closed-top 55-gal	Coring water w/suspended solids; full	8/20/99
LL1mw79-03	closed-top 55-gal	Coring water w/suspended solids; full	8/20/99
LL1mw79-04	closed-top 55-gal	Coring water w/suspended solids; 1/2 full	8/20/99
LL1mw79-05	open-top 55-gal	rock cuttings; 1/2 full	8/20/99
LL1mw79-06	open-top 55-gal	soil cuttings; full	8/28/99
LL1mw79-07	closed-top 55-gal	Coring water w/suspended solids; full	8/28/99
LL1mw79-DV1	closed-top 55-gal	development water; full	8/31/99
LL1mw79-DV2	closed-top 55-gal	development water, full	8/31/99
LL1mw79-DV3	closed-top 55-gal	development water; full	8/31/99
LL1mw79-DV4	closed-top 55-gal	development water; full	8/31/99
LL1mw79-DV5	closed-top 55-gal	development water; full	8/31/99
LL1mw79-DV6	closed-top 55-gal	development water; full	8/31/99
LL1mw79-PW1	closed-top 55-gal	purge water; 15 gal	9/2/99
LL1mw81-01	open-top 55-gal	soil cuttings; full	8/19/99
LL1mw81-02	open-top 55-gal	saturated soil cuttings; full	8/23/99
LL1mw81-03	closed-top 55-gal	Coring water w/suspended solids; full	8/22/99
LL1mw81-DV1	closed-top 55-gal	development water; full	8/28/99
LL1mw84-01	open-top 55-gal	unsaturated soil cuttings; full	8/27/99

Table 1. Continued

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
LL1mw84-02	open-top 55-gal	saturated soil cuttings; 1/2 full	8/26 to 8/27/99
LL1mw84-DV1	closed-top 55-gal	development/purge water; full	8/30/99
LL1mw82-01	closed-top 55-gal	unsaturated soil cuttings; full	8/27/99
LL1mw82-DV1	closed-top 55-gal	development water; full	8/31/99
LL1mw78-01	open-top 55-gal	unsaturated soil cuttings; full	8/24/99
LL1mw78-02	open-top 55-gal	unsaturated soil cuttings; full	8/25/99
LL1mw78-DV1	closed-top 55-gal	development water; full	8/28/99
LL1mw78-DV2	closed-top 55-gal	Development/purge water; 3/4 full	8/28/99
LL1mw83-01	open-top 55-gal	unsaturated soil cuttings; full	8/25/99
LL1mw83-02	open-top 55-gal	saturated soil cuttings and plastic; 1/2 full	8/25/99
LL1mw83-DV1	closed-top 55-gal	Development/purge water; 20 gal	8/29/99
LL1mw65-1	closed-top 55-gal	Purge water; 20 gal	9/5/99
LL1mw64-1	closed-top 55-gal	Purge water; 20 gal	9/5/99
LL1mw59-1	closed-top 55-gal	Purge water, 25 gal	9/5/99
LL1mw60-PW1	closed-top 55-gal	purge water, 1/4 full	9/7/99
DECON-1	open-top 55-gal	plastic sheeting w/ soil from decontamination pad	8/20/99
DECON-2	closed-top 55-gal	Potable rinse w/suspended solids; full	8/20/99
DECON-3	closed-top 55-gal	Potable rinse w/suspended solids; full	8/20 to 8/21/99
DECON-4	closed-top 55-gal	Potable rinse w/suspended solids; full	8/22/99
DECON-5	closed-top 55-gal	Potable rinse w/suspended solids; full	8/24/99
DECON-6	closed-top 55-gal	Potable rinse w/suspended solids; full	8/28/99
DECON-7	closed-top 55-gal	Potable rinse w/suspended solids; full	8/28/99
DECON-8	closed-top 55-gal	Potable rinse w/suspended solids; full	8/28/99
DECON-9	closed-top 55-gal	Potable rinse w/suspended solids; full	8/29/99
DECON-10	closed-top 55-gal	Potable rinse w/suspended solids; full	8/29/99

Table 1. Continued

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
DECON-11	closed-top 55-gal	Potable rinse w/suspended solids; full	8/30/99

Per Section 7 of the Facility-Wide SAP (USACE 1996), the analytical results from environmental samples collected during the Phase II RI are used, where possible, to characterize IDW for each sampling medium. For example, analytical results from the sampling of groundwater monitoring wells are used to characterize the drums containing correlative soil cuttings and liquid IDW for waste characterization. Where correlative samples do not exist (e.g., for decontamination fluids), composite waste characterization samples were collected and the analyses used to characterize these wastes. Only environmental samples with analytical results above method detection limits are used to characterize waste containers. These results are shown in Attachment 1.

Attachment 1 presents the frequency of detects, minimum and maximum detected concentrations, and average concentrations for each analyte. Note that the average value is calculated from all reported values, using either the detected concentration or, if the analyte was not detected the quantitation limit for that sample. For analyses that include non-detects, the average represents an upper bound on the true average. Because quantitation limits vary between samples, the calculated average may exceed the maximum detect in cases where non-detects are included.

For the characterization of wastes as hazardous or non-hazardous, the Resource Conservation and Recovery Act (RCRA) regulatory limits are compared to the mean contaminant levels as presented in Attachment 1. Table 7-1 of the Facility-Wide SAP shows the maximum concentration of contaminants for the toxicity characteristic for hazardous wastes per 40 CFR 261.24. Analytical results for the correlative IDW are compared with these criteria to determine whether any wastes are potentially hazardous. For soils and rock cuttings,, groundwater samples are used to characterize the cuttings from monitoring well boreholes, because leaching to groundwater yields adequate characterization results. In the case of Load Line 1, no environmental soil samples were collected as part of this study. For liquid IDW the environmental sample analytical results are compared directly to the regulatory limits to determine a waste characterization. In the case of decontamination fluids, composite waste samples were analyzed and compared to regulatory criteria.

Fifty-two drums and two polytanks of IDW were generated during the Phase II RI at Load Line 1 (Table 1). Results from correlative groundwater samples indicated that none of the groundwater drums were potentially hazardous. Eleven decontamination liquid drums

were sampled for TCLP waste characterization instead of using correlative environmental sample results. Four samples were collected for TCLP analysis. Drums DECON-1 and DECON-11 were sampled individually. Composite samples were collected from drums DECON-2-6 and DECON-7-10. Comparison of the results above detection limits to TCLP criteria are shown in Table 2.

Table 2. Comparison of TCLP Characterization Results for LL1 to TCLP Criteria

Drum/Sample I.D.	Chemical	TCLP Result (mg/L)	TCLP Criterion (mg/L)	TCLP Pass/Fail
DECON-1	Barium	0.45	100	P
	Chromium	0.015	5	P
DECON-2-6	Barium	0.25	100	P
	Chromium	0.22	5	P
DECON-7-10	Barium	0.21	100	P
	Chromium	0.019	5	P
DECON-11	Barium	2.2	100	P
	Chromium	0.22	5	P

Non-hazardous wastes are further characterized as contaminated or non-contaminated based on evaluation of detected contamination. Containers with detected levels of organic and/or explosive contamination or elevated concentrations of inorganic constituents are classified as non-hazardous contaminated wastes. Containers with no detected levels of organic or explosive contamination and no elevated levels of inorganic constituents are classified as non-hazardous, non-contaminated wastes.

As shown in Attachment 1, none of the drums of development/purge water from the monitoring wells installed in the Phase II RI met or exceeded the TCLP criteria. All of these drums can be classified as non-hazardous. Of these drums, explosives were not detected in development/purge water from LL1mw-064, -065, -067, and –082, or from the soil cuttings for LL1mw-082. These five containers are considered non-contaminated, non-hazardous waste, and are recommended for on-site disposal at RVAAP by emptying them onto the ground. The soil drum for LL1mw-082 will be spread, seeded, and mulched.

As shown in Table 3, 47 drums and two poly tanks are classified as non-hazardous ,contaminated waste because of detectable levels of explosives and/or metals or VOCs in groundwater or characterization samples. These containers consist of unsaturated and saturated soil cuttings, development and purge water, decontamination wash/rinse water and sludge, and soil, plastic, and PPE from a drill rig hydraulic spill. These containers are recommended for off-site disposal at a licensed disposal facility.

Table 3. Summary of Final Waste Classification and Recommended Disposal Options

Non-Hazardous Contaminated Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
SPILL DEBRIS-01	Sorbent pads and plastic sheeting	Organics	Permitted facility
LL1mw85-01	Soil	Explosives and metals	Permitted facility
LL1mw85-02	Soil	Explosives and metals	Permitted facility
LL1mw85-03	Soil	Explosives and metals	Permitted facility
LL1mw85-TANK1	Water	Explosives and metals	Permitted facility
LL1mw80-01	Soil	Explosives and metals	Permitted facility
LL1mw80-TANK1	Water	Explosives and metals	Permitted facility
LL1mw79-01	Soil	Explosives and metals	Permitted facility
LL1mw79-02	Water	Explosives and metals	Permitted facility
LL1mw79-03	Water	Explosives and metals	Permitted facility
LL1mw79-04	Water	Explosives and metals	Permitted facility
LL1mw79-05	Soil/rock	Explosives and metals	Permitted facility
LL1mw79-06	Soil/rock	Explosives and metals	Permitted facility
LL1mw79-07	Water	Explosives and metals	Permitted facility
LL1mw79-DV1	Water	Explosives and metals	Permitted facility
LL1mw79-DV2	Water	Explosives and metals	Permitted facility
LL1mw79-DV3	Water	Explosives and metals	Permitted facility
LL1mw79-DV4	Water	Explosives and metals	Permitted facility
LL1mw79-DV5	Water	Explosives and metals	Permitted facility
LL1mw79-DV6	Water	Explosives and metals	Permitted facility
LL1mw81-01	Soil	Explosives and metals	Permitted facility
LL1mw81-02	Soil	Explosives and metals	Permitted facility
LL1mw81-03	Water	Explosives and metals	Permitted facility
LL1mw81-DV1	Water	Explosives and metals	Permitted facility
LL1mw-84-01	Soil	Explosives and metals	Permitted facility
LL1mw-84-02	Soil	Explosives and metals	Permitted facility
LL1mw-84-DV1	Water	Explosives and metals	Permitted facility
LL1mw78-01	Soil	Explosives and metals	Permitted facility
LL1mw78-02	Soil	Explosives and metals	Permitted facility
LL1mw78-DV1	Water	Explosives and metals	Permitted facility

Table 3. Continued

Non-Hazardous Contaminated Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
LL1mw78-DV2	Water	Explosives and metals	Permitted facility
LL1mw83-01	Soil	Explosives and metals	Permitted facility
LL1mw83-02	Soil	Explosives and metals	Permitted facility
LL1mw83-DV1	Water	Explosives and metals	Permitted facility
LL1mw59-1	Water	Explosives and metals	Permitted facility
LL1mw60-PW1	Water	Explosives and metals	Permitted facility
DECON-1	Water	Metals	Permitted facility
DECON-2	Water	Metals	Permitted facility
DECON-3	Water	Metals	Permitted facility
DECON-4	Water	Metals	Permitted facility
DECON-5	Water	Metals	Permitted facility
DECON-6	Water	Metals	Permitted facility
DECON-7	Water	Metals	Permitted facility
DECON-8	Water	Metals	Permitted facility
DECON-9	Water	Metals	Permitted facility
DECON-10	Water	Metals	Permitted facility
DECON-11	Water	Metals	Permitted facility

Non-Hazardous Non-Contaminated Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
LL1mw82-01	Soil	No detected contaminants	On-site disposal
LL1mw82-DV1	Water	No detected contaminants	On-site disposal
LL1mw65-1	Water	No detected contaminants	On-site disposal
LL1mw64-1	Water	No detected contaminants	On-site disposal
LL1mw67-1	Water	No detected contaminants	On-site disposal

Please provide your concurrence or direction concerning the enclosed waste characterization and disposal recommendations. Following your direction and immediate approval, we will proceed with the appropriate waste disposal before the onset of severe winter temperatures. Disposal is currently scheduled for the week of December 27, 1999.

If you have any questions or require additional information, please do not hesitate to contact me at 423-481-8761 or Kathy Dominic at 918-625-7614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

K Dominic for

Stephen B. Selecman
Project Manager

CC: Eileen Mohr, Ohio EPA
Mark Patterson, RVAAP
Kevin Jago, SAIC
Kathy Dominic, SAIC

AETS
12480B DEBARTOLO DRIVE
NORTH JACKSON, OH 44451
(330) 538-0600
FAX (330) 538-0606
ATTN: STEPHEN JAMES

CUSTOMER:
CUSTOMER #:

LAB NAME: AT LABS (330) 758-0830
FOR PICK-UP CALL KEN AT 758-5788

Explosives Deleted
per John Sabaska 11/10/99 @ 10:00AM

SAMPLE LOCATION	DATE	SAMPLE NUMBER	PCB, SOIL/WATER - A711-25	PCB, OIL/WIPES - A711-26	FLASH POINT - A 711-64	TCLP METALS - A 711-22	REACTIVE CYANIDE - A 711-65	REACTIVE SULFIDE - A711-66	FULL TCLP - A711-15	TCLP NON-VOLATILE - A711-16	TCLP VOLATILE, ZHE - A711-17	TCLP VOLATILE, VOA - A711-18	TCLP - SEMIVOLATILES BNA - A711-19	TCLP PESTICIDES - A711-20	TCLP HERBICIDES - A711-21	TOTAL PETROLEUM HYDROCARBONS (TPH) - A711-30	TOTAL ORGANIC CARBON (TOC) - A711-62	TOTAL ORGANIC HALOGENS (TOX) - A711-63	VOC - A711-1		Explosives			
O-43	11/4/99	Decon 01 .1			✓	✓													✓		✓			
	11/4/99	Spill Debris 01 .2			✓	✓													✓		✓			
	11/4/99	Decon 2-6 AQ .4			✓	✓													✓		✓			
	11/4/99	Decon 7-10 AQ .7			✓	✓													✓		✓			
	11/4/99	Decon 11 AQ .3			✓	✓													✓		✓			
	11/4/99	EBG SO-002 .6			✓	✓													✓		✓			
	11/4/99	EBG SO-001 .5			✓	✓													✓		✓			

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
David Sampson	11/4/99		1:-9
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
			11/5/99
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

E.C. LABORATORIES
Sample Log-in Data Sheet

Chain of Custody: (Present) / Absent

Sample Tags: Present / (Absent)

Sample Transplant: Cooler / (Cardboard box) Ice / (Ambient)

Client: QUALENV

Date received: 11-9-99

Carrier: ECL

EC Lab # 9911-1006

No. of samples submitted: 7

Total No. of containers: 7

Sample Containers	-1	-2	-3	-4	-5	-6	-7
O&G			1			1	1
Plastic Qrts							
Amber Qrts							
Squat							
VOC							
500 ml Plastic							
Other (PLASTIC BAG)	1	1		1	1		
Matrix							

Temp / pH Checked by: _____

H2SO4	
HNO3	
NaOH	

Temp. _____

Sample Tags match Chain of Custody: yes / no

Receiving/Phone Log

RECEIVED LIQ SAMPLES IN AG TABS NO VOC VIALS

	INITIALS/DATE
Logged-In by	
Reviewed by	
Work Order Completed	
Work Order Reported	
Work Order Mailed	LCR 11/19/99

ENVIRONMENTAL CONTROL LABORATORIES INC.

21337 Drake Road
Strongsville, Ohio 44136
(440) 238-6100
FAX: (440) 238-6294

ANALYTICAL REPORT

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Laboratory #		Client I.D.	Matrix	Sample Date
9911-10006	001	Decon 01	Solid	11/04/1999
9911-10006	002	Spill Debris 01	Solid	11/04/1999
9911-10006	003	Decon 11	Solid/Liquid	11/04/1999
9911-10006	004	EBGSO-002	Solid	11/04/1999
9911-10006	005	EBGSO-001	Solid	11/04/1999
9911-10006	006	Decon 2-6	Liquid	11/04/1999
9911-10006	007	Decon 7-10	Liquid	11/04/1999

****

Signed:
Patrick Dunn
General Manager

NYLAP# 11222

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Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-059		1,3,5-Trinitrobenzene	LL1mw-059-0686-GW	1/ 1	0.0031	0.0031				
LL1MW-059		1,3-Dinitrobenzene	LL1mw-059-0686-GW	1/ 1	0.000092	0.000092				
LL1MW-059		2,4,6-Trinitrotoluene	LL1mw-059-0686-GW	1/ 1	0.00012	0.00012				
LL1MW-059	N	2,4-Dinitrotoluene	LL1mw-059-0686-GW	1/ 1	0.00024	0.00024	0.13	0/ 1	0.00024	0.00024
LL1MW-059		Aluminum	LL1mw-059-0686-GW	1/ 2	0.325	0.45				
LL1MW-059	N	Barium	LL1mw-059-0686-GW	2/ 2	0.0107	0.012	100	0/ 2	0.0107	0.012
LL1MW-059		Calcium	LL1mw-059-0687-GF	2/ 2	20.6	20.6				
LL1MW-059		Iron	LL1mw-059-0686-GW	1/ 2	0.285	0.47				
LL1MW-059		Magnesium	LL1mw-059-0686-GW	2/ 2	6.85	6.9				
LL1MW-059		Manganese	LL1mw-059-0686-GW	2/ 2	0.0915	0.1				
LL1MW-059		Potassium	LL1mw-059-0686-GW	2/ 2	0.93	1				
LL1MW-059		RDX	LL1mw-059-0686-GW	1/ 1	0.00015	0.00015				
LL1MW-059		Sodium	LL1mw-059-0687-GF	2/ 2	6.2	6.2				
LL1MW-059		Tetryl	LL1mw-059-0686-GW	1/ 1	0.00017	0.00017				
LL1MW-059		Zinc	LL1mw-059-0686-GW	2/ 2	0.105	0.12				
LL1MW-060		1,3,5-Trinitrobenzene	LL1mw-060-0688-GW	1/ 1	0.0003	0.0003				
LL1MW-060		2,4,6-Trinitrotoluene	LL1mw-060-0688-GW	1/ 1	0.0001	0.0001				
LL1MW-060	N	2,4-Dinitrotoluene	LL1mw-060-0688-GW	1/ 1	0.000096	0.000096	0.13	0/ 1	0.000096	0.000096
LL1MW-060		Aluminum	LL1mw-060-0689-GF	1/ 2	0.28	0.36				
LL1MW-060	N	Barium	LL1mw-060-0689-GF	2/ 2	0.0215	0.022	100	0/ 2	0.0215	0.022
LL1MW-060		Calcium	LL1mw-060-0689-GF	2/ 2	36.2	36.9				
LL1MW-060		Magnesium	LL1mw-060-0688-GW	2/ 2	9.65	9.7				
LL1MW-060		Manganese	LL1mw-060-0688-GW	2/ 2	0.0225	0.033				
LL1MW-060		Potassium	LL1mw-060-0688-GW	2/ 2	0.48	0.48				
LL1MW-060		Sodium	LL1mw-060-0689-GF	2/ 2	2.75	2.8				
LL1MW-060		Zinc	LL1mw-060-0688-GW	2/ 2	0.0165	0.017				
LL1MW-064		Aluminum	LL1mw-064-0692-GW	1/ 2	0.325	0.45				
LL1MW-064	N	Arsenic	LL1mw-064-0693-GF	2/ 2	0.00365	0.0038	5	0/ 2	0.00365	0.0038
LL1MW-064	N	Barium	LL1mw-064-0692-GW	2/ 2	0.0525	0.056	100	0/ 2	0.0525	0.056
LL1MW-064		Calcium	LL1mw-064-0692-GW	2/ 2	60.9	62.8				
LL1MW-064		Copper	LL1mw-064-0693-GF	2/ 2	0.00585	0.0077				

Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-064		Cyanide	LL1mw-064-0692-GW	1/ 1	0.0049	0.0049				
LL1MW-064		Iron	LL1mw-064-0692-GW	2/ 2	1.24	1.8				
LL1MW-064		Magnesium	LL1mw-064-0692-GW	2/ 2	9.75	10.1				
LL1MW-064		Manganese	LL1mw-064-0692-GW	2/ 2	0.155	0.17				
LL1MW-064		Potassium	LL1mw-064-0692-GW	2/ 2	0.755	0.82				
LL1MW-064		Sodium	LL1mw-064-0692-GW	2/ 2	4.95	5				
LL1MW-064		Zinc	LL1mw-064-0693-GF	1/ 2	0.0185	0.017				
LL1MW-065		Aluminum	LL1mw-065-0694-GW	1/ 2	0.505	0.81				
LL1MW-065	N	Arsenic	LL1mw-065-0695-GF	2/ 2	0.0046	0.0047	5	0/ 2	0.0046	0.0047
LL1MW-065	N	Barium	LL1mw-065-0694-GW	2/ 2	0.068	0.075	100	0/ 2	0.068	0.075
LL1MW-065		Calcium	LL1mw-065-0694-GW	2/ 2	79.4	81.2				
LL1MW-065		Cyanide	LL1mw-065-0694-GW	1/ 1	0.005	0.005				
LL1MW-065		Iron	LL1mw-065-0694-GW	2/ 2	0.681	1.3				
LL1MW-065		Magnesium	LL1mw-065-0694-GW	2/ 2	18.1	18.6				
LL1MW-065		Manganese	LL1mw-065-0694-GW	2/ 2	0.325	0.34				
LL1MW-065		Potassium	LL1mw-065-0694-GW	2/ 2	1.15	1.3				
LL1MW-065	N	Selenium	LL1mw-065-0694-GW	1/ 2	0.0057	0.0064	1	0/ 2	0.0057	0.0064
LL1MW-065		Sodium	LL1mw-065-0694-GW	2/ 2	9.95	10				
LL1MW-065		Zinc	LL1mw-065-0694-GW	2/ 2	0.125	0.14				
LL1MW-067		Aluminum	LL1mw-067-0696-GW	2/ 2	0.439	0.78				
LL1MW-067	N	Barium	LL1mw-067-0696-GW	2/ 2	0.0315	0.034	100	0/ 2	0.0315	0.034
LL1MW-067		Calcium	LL1mw-067-0697-GF	2/ 2	53.3	53.6				
LL1MW-067		Copper	LL1mw-067-0697-GF	1/ 2	0.0145	0.004				
LL1MW-067		Iron	LL1mw-067-0696-GW	2/ 2	0.879	1.7				
LL1MW-067	N	Lead	LL1mw-067-0696-GW	1/ 2	0.00385	0.0047	5	0/ 2	0.00385	0.0047
LL1MW-067		Magnesium	LL1mw-067-0696-GW	2/ 2	25.9	26				
LL1MW-067		Manganese	LL1mw-067-0696-GW	2/ 2	0.22	0.27				
LL1MW-067		Nickel	LL1mw-067-0696-GW	2/ 2	0.0695	0.072				
LL1MW-067		Potassium	LL1mw-067-0696-GW	2/ 2	1.3	1.4				
LL1MW-067		Sodium	LL1mw-067-0696-GW	2/ 2	4.2	4.3				
LL1MW-067		Zinc	LL1mw-067-0697-GF	2/ 2	0.0185	0.02				

Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-078		1,3-Dinitrobenzene	LL1mw-078-0698-GW	1/ 1	0.0001	0.0001				
LL1MW-078		2,4,6-Trinitrotoluene	LL1mw-078-0698-GW	1/ 1	0.0002	0.0002				
LL1MW-078	N	2,4-Dinitrotoluene	LL1mw-078-0698-GW	1/ 1	0.00011	0.00011	0.13	0/ 1	0.00011	0.00011
LL1MW-078		Aluminum	LL1mw-078-0698-GW	2/ 2	0.605	1.1				
LL1MW-078	N	Barium	LL1mw-078-0698-GW	2/ 2	0.0575	0.06	100	0/ 2	0.0575	0.06
LL1MW-078		Calcium	LL1mw-078-0699-GF	2/ 2	30	31.2				
LL1MW-078		Cobalt	LL1mw-078-0698-GW	2/ 2	0.11	0.11				
LL1MW-078		Copper	LL1mw-078-0699-GF	1/ 2	0.0147	0.0043				
LL1MW-078		Iron	LL1mw-078-0698-GW	2/ 2	0.584	1.1				
LL1MW-078		Magnesium	LL1mw-078-0699-GF	2/ 2	7.15	7.3				
LL1MW-078		Manganese	LL1mw-078-0698-GW	2/ 2	0.625	0.64				
LL1MW-078		Nickel	LL1mw-078-0698-GW	2/ 2	0.026	0.027				
LL1MW-078		Potassium	LL1mw-078-0698-GW	2/ 2	4.95	5.1				
LL1MW-078		Sodium	LL1mw-078-0698-GW	2/ 2	11.8	13				
LL1MW-078		Thallium	LL1mw-078-0699-GF	1/ 2	0.0013	0.0006				
LL1MW-078		Zinc	LL1mw-078-0698-GW	2/ 2	0.0245	0.027				
LL1MW-079		1,3-Dinitrobenzene	LL0714	1/ 2	0.000123	0.000046				
LL1MW-079		2,4,6-Trinitrotoluene	LL1mw-079-0700-GW	2/ 2	0.0000805	0.000085				
LL1MW-079	N	2,4-Dinitrotoluene	LL0714	1/ 4	0.00505	0.000077	0.13	0/ 4	0.00505	0.000077
LL1MW-079		Aluminum	LL0714	1/ 4	0.25	0.4				
LL1MW-079	N	Barium	LL0714	4/ 4	0.00428	0.0053	100	0/ 4	0.00428	0.0053
LL1MW-079		Bis(2-ethylhexyl)phthalate	LL0714	1/ 2	0.0068	0.0036				
LL1MW-079		Calcium	LL0714	4/ 4	36.5	38.9				
LL1MW-079	N	Chloroform	LL1mw-079-0700-GW	2/ 2	0.00115	0.0012	6	0/ 2	0.00115	0.0012
LL1MW-079		Copper	LL0714	1/ 4	0.0202	0.0058				
LL1MW-079		HMX	LL0714	2/ 2	0.000135	0.00014				
LL1MW-079		Iron	LL0714	1/ 4	0.0883	0.053				
LL1MW-079		Magnesium	LL0714	4/ 4	15.3	15.7				
LL1MW-079		Manganese	LL0714	4/ 4	0.54	0.55				
LL1MW-079		Methylene Chloride	LL1mw-079-0700-GW	2/ 2	0.00209	0.0034				
LL1MW-079		Nickel	LL1mw-079-0700-GW	4/ 4	0.024	0.025				

Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-079		Potassium	LL1mw-079-0700-GW	4/ 4	2.75	2.8				
LL1MW-079		RDX	LL0714	2/ 2	0.00044	0.00045				
LL1MW-079		Sodium	LL1mw-079-0700-GW	4/ 4	5.95	6.1				
LL1MW-079		Thallium	LL0714	1/ 5	0.00332	0.0006				
LL1MW-079		Zinc	LL1mw-079-0700-GW	4/ 4	0.065	0.075				
LL1MW-080		2,4,6-Trinitrotoluene	LL1mw-080-0702-GW	1/ 1	0.00018	0.00018				
LL1MW-080	N	Barium	LL1mw-080-0703-GF	2/ 2	0.0275	0.028	100	0/ 2	0.0275	0.028
LL1MW-080		Calcium	LL1mw-080-0703-GF	2/ 2	395	399				
LL1MW-080		Cyanide	LL1mw-080-0702-GW	1/ 1	0.006	0.006				
LL1MW-080		HMX	LL1mw-080-0702-GW	1/ 1	0.00092	0.00092				
LL1MW-080		Iron	LL1mw-080-0703-GF	2/ 2	3.3	3.4				
LL1MW-080		Magnesium	LL1mw-080-0703-GF	2/ 2	21.4	21.6				
LL1MW-080		Manganese	LL1mw-080-0703-GF	2/ 2	4.75	4.8				
LL1MW-080		Nickel	LL1mw-080-0703-GF	2/ 2	0.0185	0.02				
LL1MW-080		Potassium	LL1mw-080-0703-GF	2/ 2	8.8	8.8				
LL1MW-080		RDX	LL1mw-080-0702-GW	1/ 1	0.0019	0.0019				
LL1MW-080		Sodium	LL1mw-080-0702-GW	2/ 2	2.25	2.3				
LL1MW-080		Zinc	LL1mw-080-0702-GW	2/ 2	0.0435	0.058				
LL1MW-081		1,3-Dinitrobenzene	LL1mw-081-0715-GF	2/ 2	0.0000455	0.000046				
LL1MW-081		3-Nitrotoluene	LL1mw-081-0715-GF	1/ 2	0.00017	0.00014				
LL1MW-081	N	Barium	LL1mw-081-0715-GF	4/ 4	0.0185	0.019	100	0/ 4	0.0185	0.019
LL1MW-081		Calcium	LL1mw-081-0715-GF	4/ 4	45	46.5				
LL1MW-081		Cyanide	LL1mw-081-0715-GF	1/ 2	0.00755	0.0051				
LL1MW-081		Iron	LL1mw-081-0704-GW	4/ 4	1.5	1.6				
LL1MW-081		Magnesium	LL1mw-081-0715-GF	4/ 4	13.8	14.3				
LL1MW-081		Manganese	LL1mw-081-0715-GF	4/ 4	2.33	2.4				
LL1MW-081		Potassium	LL1mw-081-0715-GF	4/ 4	2.45	2.5				
LL1MW-081		RDX	LL1mw-081-0715-GF	2/ 2	0.00018	0.00021				
LL1MW-081		Sodium	LL1mw-081-0705-GF	4/ 4	2.68	2.8				
LL1MW-081		Zinc	LL1mw-081-0715-GF	4/ 4	0.143	0.16				

Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-082	N	Barium	LL1mw-082-0707-GF	2/ 2	0.0195	0.02	100	0/ 2	0.0195	0.02
LL1MW-082		Calcium	LL1mw-082-0707-GF	2/ 2	22	22.2				
LL1MW-082		Cyanide	LL1mw-082-0706-GW	1/ 1	0.011	0.011				
LL1MW-082		Iron	LL1mw-082-0706-GW	2/ 2	0.255	0.35				
LL1MW-082		Magnesium	LL1mw-082-0707-GF	2/ 2	11	11.2				
LL1MW-082		Manganese	LL1mw-082-0707-GF	2/ 2	0.865	0.88				
LL1MW-082		Nickel	LL1mw-082-0706-GW	2/ 2	0.016	0.016				
LL1MW-082		Potassium	LL1mw-082-0707-GF	2/ 2	1.5	1.5				
LL1MW-082		Sodium	LL1mw-082-0707-GF	2/ 2	0.98	0.98				
LL1MW-082		Zinc	LL1mw-082-0707-GF	2/ 2	0.0355	0.043				
LL1MW-083		1,3,5-Trinitrobenzene	LL1mw-083-0708-GW	1/ 1	0.0053	0.0053				
LL1MW-083		1,3-Dinitrobenzene	LL1mw-083-0708-GW	1/ 1	0.0013	0.0013				
LL1MW-083		2,4,6-Trinitrotoluene	LL1mw-083-0708-GW	1/ 1	0.011	0.011				
LL1MW-083	N	2,4-Dinitrotoluene	LL1mw-083-0708-GW	1/ 1	0.0052	0.0052	0.13	0/ 1	0.0052	0.0052
LL1MW-083		2,6-Dinitrotoluene	LL1mw-083-0708-GW	1/ 1	0.0038	0.0038				
LL1MW-083		Aluminum	LL1mw-083-0708-GW	2/ 2	0.138	0.18				
LL1MW-083	N	Arsenic	LL1mw-083-0708-GW	2/ 2	0.0048	0.0052	5	0/ 2	0.0048	0.0052
LL1MW-083	N	Barium	LL1mw-083-0709-GF	2/ 2	0.0675	0.075	100	0/ 2	0.0675	0.075
LL1MW-083		Calcium	LL1mw-083-0709-GF	2/ 2	23.2	23.2				
LL1MW-083		Cobalt	LL1mw-083-0708-GW	2/ 2	0.265	0.27				
LL1MW-083		Iron	LL1mw-083-0708-GW	2/ 2	0.315	0.35				
LL1MW-083		Magnesium	LL1mw-083-0708-GW	2/ 2	8.8	8.9				
LL1MW-083		Manganese	LL1mw-083-0708-GW	2/ 2	2.35	2.4				
LL1MW-083		Nickel	LL1mw-083-0708-GW	2/ 2	0.135	0.14				
LL1MW-083		Potassium	LL1mw-083-0708-GW	2/ 2	3.65	3.7				
LL1MW-083		RDX	LL1mw-083-0708-GW	1/ 1	0.00066	0.00066				
LL1MW-083		Sodium	LL1mw-083-0708-GW	2/ 2	37.7	38.1				
LL1MW-083		Tetryl	LL1mw-083-0708-GW	1/ 1	0.00012	0.00012				
LL1MW-083		Thallium	LL1mw-083-0709-GF	1/ 2	0.0013	0.0006				
LL1MW-083		Zinc	LL1mw-083-0709-GF	2/ 2	0.084	0.092				

Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-084		1,3,5-Trinitrobenzene	LL1mw-084-0710-GW	1/ 1	0.0061	0.0061				
LL1MW-084		1,3-Dinitrobenzene	LL1mw-084-0710-GW	1/ 1	0.00099	0.00099				
LL1MW-084		2,4,6-Trinitrotoluene	LL1mw-084-0710-GW	1/ 1	0.015	0.015				
LL1MW-084	N	2,4-Dinitrotoluene	LL1mw-084-0710-GW	1/ 1	0.0079	0.0079	0.13	0/ 1	0.0079	0.0079
LL1MW-084		Aluminum	LL1mw-084-0710-GW	2/ 2	2.6	2.7				
LL1MW-084	N	Arsenic	LL1mw-084-0711-GF	1/ 2	0.00535	0.0057	5	0/ 2	0.00535	0.0057
LL1MW-084	N	Barium	LL1mw-084-0711-GF	2/ 2	0.0315	0.033	100	0/ 2	0.0315	0.033
LL1MW-084		Beryllium	LL1mw-084-0711-GF	2/ 2	0.00076	0.00078				
LL1MW-084		Calcium	LL1mw-084-0710-GW	2/ 2	28.9	29.4				
LL1MW-084		Cobalt	LL1mw-084-0710-GW	2/ 2	0.058	0.058				
LL1MW-084		Copper	LL1mw-084-0710-GW	2/ 2	0.0225	0.023				
LL1MW-084		Cyanide	LL1mw-084-0710-GW	1/ 1	0.0087	0.0087				
LL1MW-084		Iron	LL1mw-084-0710-GW	2/ 2	2.9	2.9				
LL1MW-084		Magnesium	LL1mw-084-0711-GF	2/ 2	5.1	5.1				
LL1MW-084		Manganese	LL1mw-084-0710-GW	2/ 2	0.595	0.6				
LL1MW-084		Nickel	LL1mw-084-0711-GF	2/ 2	0.087	0.087				
LL1MW-084		Potassium	LL1mw-084-0710-GW	2/ 2	3.45	3.5				
LL1MW-084	N	Selenium	LL1mw-084-0710-GW	1/ 2	0.00455	0.0041	1	0/ 2	0.00455	0.0041
LL1MW-084		Sodium	LL1mw-084-0711-GF	2/ 2	2.75	2.8				
LL1MW-084		Thallium	LL1mw-084-0711-GF	1/ 2	0.00145	0.0009				
LL1MW-084		Zinc	LL1mw-084-0711-GF	2/ 2	0.2	0.21				
LL1MW-085		1,3-Dinitrobenzene	LL1mw-085-0712-GW	1/ 1	0.000082	0.000082				
LL1MW-085		Aluminum	LL1mw-085-0712-GW	1/ 2	0.455	0.71				
LL1MW-085	N	Arsenic	LL1mw-085-0712-GW	2/ 2	0.0335	0.041	5	0/ 2	0.0335	0.041
LL1MW-085	N	Barium	LL1mw-085-0712-GW	2/ 2	0.0285	0.031	100	0/ 2	0.0285	0.031
LL1MW-085		Calcium	LL1mw-085-0712-GW	2/ 2	88.1	89.1				
LL1MW-085		Cobalt	LL1mw-085-0712-GW	2/ 2	0.025	0.027				
LL1MW-085		Iron	LL1mw-085-0712-GW	2/ 2	2.1	2.9				
LL1MW-085		Magnesium	LL1mw-085-0712-GW	2/ 2	24.4	24.9				
LL1MW-085		Manganese	LL1mw-085-0712-GW	2/ 2	0.945	0.97				
LL1MW-085		Methylene Chloride	LL1mw-085-0712-GW	1/ 1	0.0028	0.0028				
LL1MW-085		Nickel	LL0713	2/ 2	0.12	0.12				
LL1MW-085		Potassium	LL1mw-085-0712-GW	1/ 1	3	3				

Attachment 1. Analytes Detected in Samples Associated with Load Line 1 Investigation Derived Waste

Drum ID	Max > TCLP	Chemical	ID of Max Concentration	Proportion Detected	Mean (mg/L)	Max Detect (mg/L)	TCLP Criteria (mg/L)	Proportion >TCLP	Mean Adj. for TCLP (mg/L)	Max Detect Adj. for TCLP (mg/L)
LL1MW-085		Potassium -DISS	LL0713	1/ 1	2.7	2.7				
LL1MW-085		Sodium	LL0713	2/ 2	1.6	1.6				
LL1MW-085		Tetryl	LL1mw-085-0712-GW	1/ 1	0.00014	0.00014				
LL1MW-085		Zinc	LL1mw-085-0712-GW	2/ 2	0.235	0.29				

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 001
Client I.D. Decon 01
Sample Date: 11/04/1999
Matrix: Solid

TCLP Extract*: 11/17/1999

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/18/99
Arsenic	6010B	0.20	BDL	mg/L	11/18/99
Barium	6010B	0.020	0.45	mg/L	11/18/99
Cadmium	6010B	0.020	BDL	mg/L	11/18/99
Chromium	6010B	0.010	0.015	mg/L	11/18/99
Lead	6010B	0.050	BDL	mg/L	11/18/99
Mercury	7470A	0.0002	BDL	mg/L	11/18/99
Selenium	6010B	0.20	BDL	mg/L	11/18/99
Silver	6010B	0.010	BDL	mg/L	11/18/99

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 001
Client I.D. Decon 01
Sample Date: 11/04/1999
Matrix: Solid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Ignitability Screen	1030		NEG		11/15/99

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 001
Client I.D. Decon 01
Sample Date: 11/04/1999
Matrix: Solid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
VOLATILE ORGANICS					11/12/99
Acetone	8260	0.2	BDL	mg/Kg	11/12/99
Acrolein	8260	0.1	BDL	mg/Kg	11/12/99
Acrylonitrile	8260	0.1	BDL	mg/Kg	11/12/99
Benzene	8260	0.005	BDL	mg/Kg	11/12/99
Bromodichloromethane	8260	0.015	BDL	mg/Kg	11/12/99
Bromoform	8260	0.005	BDL	mg/Kg	11/12/99
Bromomethane	8260	0.01	BDL	mg/Kg	11/12/99
2-Butanone (MEK)	8260	0.1	BDL	mg/Kg	11/12/99
Carbon Disulfide	8260	0.005	BDL	mg/Kg	11/12/99
Carbon Tetrachloride	8260	0.005	BDL	mg/Kg	11/12/99
Chlorobenzene	8260	0.005	BDL	mg/Kg	11/12/99
Chloroethane	8260	0.01	BDL	mg/Kg	11/12/99
2-Chloroethylvinyl Ether	8260	0.01	BDL	mg/Kg	11/12/99
Chloroform	8260	0.05	BDL	mg/Kg	11/12/99
Chloromethane	8260	0.01	BDL	mg/Kg	11/12/99
Chlorodibromomethane	8260	0.005	BDL	mg/Kg	11/12/99
1,4-Dichloro-2-Butene	8260	0.005	BDL	mg/Kg	11/12/99
Dichlorodifluoromethane	8260	0.005	BDL	mg/Kg	11/12/99
1,1-Dichloroethane	8260	0.005	BDL	mg/Kg	11/12/99
1,2-Dichloroethane	8260	0.005	BDL	mg/Kg	11/12/99
1,1-Dichloroethene	8260	0.005	BDL	mg/Kg	11/12/99
1,2-Dichloropropane	8260	0.005	BDL	mg/Kg	11/12/99
trans 1,2-Dichloroethene	8260	0.005	BDL	mg/Kg	11/12/99
cis 1,2-Dichloroethene	8260	0.005	BDL	mg/Kg	11/12/99
trans-1,3-Dichloropropene	8260	0.005	BDL	mg/Kg	11/12/99
cis-1,3-Dichloropropene	8260	0.005	BDL	mg/Kg	11/12/99
Ethyl Benzene	8260	0.01	BDL	mg/Kg	11/12/99
Ethyl Methacrylate	8260	0.005	BDL	mg/Kg	11/12/99
2-Hexanone	8260	0.05	BDL	mg/Kg	11/12/99
Iodomethane	8260	0.005	BDL	mg/Kg	11/12/99
4-Methyl-2-pentanone (MIBK)	8260	0.05	BDL	mg/Kg	11/12/99

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 001
Client I.D. Decon 01
Sample Date: 11/04/1999
Matrix: Solid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Methylene Chloride	8260	0.02	BDL	mg/Kg	11/12/99
Styrene	8260	0.005	BDL	mg/Kg	11/12/99
1,1,2,2-Tetrachloroethane	8260	0.005	BDL	mg/Kg	11/12/99
Tetrachloroethene	8260	0.005	BDL	mg/Kg	11/12/99
Toluene	8260	0.005	BDL	mg/Kg	11/12/99
1,1,1-Trichloroethane	8260	0.005	BDL	mg/Kg	11/12/99
1,1,2-Trichloroethane	8260	0.005	BDL	mg/Kg	11/12/99
Trichloroethene	8260	0.005	BDL	mg/Kg	11/12/99
Trichlorofluoromethane	8260	0.005	BDL	mg/Kg	11/12/99
1,2,3-Trichloropropane	8260	0.005	BDL	mg/Kg	11/12/99
Vinyl Acetate	8260	0.05	BDL	mg/Kg	11/12/99
Vinyl Chloride	8260	0.01	BDL	mg/Kg	11/12/99
Xylenes	8260	0.01	BDL	mg/Kg	11/12/99
1,2-Dichloroethane-d4	SURR		123	69 - 124%	11/12/99
Toluene-d8	SURR		81	69 - 118%	11/12/99
4-Bromofluorobenzene	SURR		100	56 - 116%	11/12/99
Dibromofluoromethane	SURR		90	80 - 124%	11/12/99

Note:BDL(Below Detection Limit)

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North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 006
Client I.D. Decon 2-6
Sample Date: 11/04/1999
Matrix: Liquid

TCLP Extract*: 11/17/1999

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/18/99
Arsenic	6010B	0.20	BDL	mg/L	11/18/99
Barium	6010B	0.020	0.25	mg/L	11/18/99
Cadmium	6010B	0.020	BDL	mg/L	11/18/99
Chromium	6010B	0.010	0.022	mg/L	11/18/99
Lead	6010B	0.050	BDL	mg/L	11/18/99
Mercury	7470A	0.0002	BDL	mg/L	11/18/99
Selenium	6010B	0.20	BDL	mg/L	11/18/99
Silver	6010B	0.010	BDL	mg/L	11/18/99

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
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North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 006
Client I.D. Decon 2-6
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Flash Point	1010		> 200	DEG F	11/16/99

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

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E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 006
Client I.D. Decon 2-6
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Volatile Organics					11/11/99
Acetone	8260	100	BDL	ug/L	11/11/99
Benzene	8260	5	BDL	ug/L	11/11/99
Bromodichloromethane	8260	5	BDL	ug/L	11/11/99
Bromoform	8260	5	BDL	ug/L	11/11/99
Bromomethane	8260	10	BDL	ug/L	11/11/99
2-Butanone (MEK)	8260	10	BDL	ug/L	11/11/99
Carbon Disulfide	8260	20	BDL	ug/L	11/11/99
Carbon Tetrachloride	8260	5	BDL	ug/L	11/11/99
Chlorobenzene	8260	5	BDL	ug/L	11/11/99
Chlorodibromomethane	8260	5	BDL	ug/L	11/11/99
Chloroethane	8260	10	BDL	ug/L	11/11/99
Chloroform	8260	20	BDL	ug/L	11/11/99
Chloromethane	8260	5	BDL	ug/L	11/11/99
Dichlorodifluoromethane	8260	5	BDL	ug/L	11/11/99
1,1-Dichloroethane	8260	5	BDL	ug/L	11/11/99
1,2-Dichloroethane	8260	5	BDL	ug/L	11/11/99
1,1-Dichloroethene	8260	5	BDL	ug/L	11/11/99
cis 1,2-Dichloroethene	8260	5	BDL	ug/L	11/11/99
1,2-Dichloropropane	8260	5	BDL	ug/L	11/11/99
trans 1,2-Dichloroethene	8260	5	BDL	ug/L	11/11/99
cis-1,3-Dichloropropene	8260	5	BDL	ug/L	11/11/99
trans-1,3-Dichloropropene	8260	5	BDL	ug/L	11/11/99
Ethyl Benzene	8260	5	BDL	ug/L	11/11/99
2-Hexanone	8260	10	BDL	ug/L	11/11/99
Methylene Chloride	8260	10	BDL	ug/L	11/11/99
4-Methyl-2-pentanone	8260	10	BDL	ug/L	11/11/99
Styrene	8260	5	BDL	ug/L	11/11/99
1,1,2,2-Tetrachloroethane	8260	5	BDL	ug/L	11/11/99
1,1,1-Trichloroethane	8260	5	BDL	ug/L	11/11/99
1,1,2-Trichloroethane	8260	5	BDL	ug/L	11/11/99
Trichloroethene	8260	5	BDL	ug/L	11/11/99

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
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North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 006
Client I.D. Decon 2-6
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Trichlorofluoromethane	8260	5	BDL	ug/L	11/11/99
1,2,3-Trichloropropane	8260	5	BDL	ug/L	11/11/99
Tetrachloroethene	8260	5	BDL	ug/L	11/11/99
Toluene	8260	5	BDL	ug/L	11/11/99
Vinyl Chloride	8260	10	BDL	ug/L	11/11/99
Xylenes	8260	5	BDL	ug/L	11/11/99
1,2-Dichloroethane-d4	SURR		118	65-125%	11/11/99
Toluene-D8	SURR		96	78-117%	11/11/99
4-Bromofluorobenzene	SURR		94	76-119%	11/11/99
Dibromofluoromethane	SURR		87	77-126%	11/11/99

Volatiles not received in zero headspace container.

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
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North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 007
Client I.D. Decon 7-10
Sample Date: 11/04/1999
Matrix: Liquid

TCLP Extract*: 11/17/1999

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/18/99
Arsenic	6010B	0.20	BDL	mg/L	11/18/99
Barium	6010B	0.020	0.21	mg/L	11/18/99
Cadmium	6010B	0.020	BDL	mg/L	11/18/99
Chromium	6010B	0.010	0.019	mg/L	11/18/99
Lead	6010B	0.050	BDL	mg/L	11/18/99
Mercury	7470A	0.0002	BDL	mg/L	11/18/99
Selenium	6010B	0.20	BDL	mg/L	11/18/99
Silver	6010B	0.010	BDL	mg/L	11/18/99

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
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North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 007
Client I.D. Decon 7-10
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Flash Point	1010		> 200	DEG F	11/18/99

Note:BDL(Below Detection Limit)

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E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 007
Client I.D. Decon 7-10
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Volatile Organics					11/11/99
Acetone	8260	100	BDL	ug/L	11/11/99
Benzene	8260	5	BDL	ug/L	11/11/99
Bromodichloromethane	8260	5	BDL	ug/L	11/11/99
Bromoform	8260	5	BDL	ug/L	11/11/99
Bromomethane	8260	10	BDL	ug/L	11/11/99
2-Butanone (MEK)	8260	10	BDL	ug/L	11/11/99
Carbon Disulfide	8260	20	BDL	ug/L	11/11/99
Carbon Tetrachloride	8260	5	BDL	ug/L	11/11/99
Chlorobenzene	8260	5	BDL	ug/L	11/11/99
Chlorodibromomethane	8260	5	BDL	ug/L	11/11/99
Chloroethane	8260	10	BDL	ug/L	11/11/99
Chloroform	8260	20	BDL	ug/L	11/11/99
Chloromethane	8260	5	BDL	ug/L	11/11/99
Dichlorodifluoromethane	8260	5	BDL	ug/L	11/11/99
1,1-Dichloroethane	8260	5	BDL	ug/L	11/11/99
1,2-Dichloroethane	8260	5	BDL	ug/L	11/11/99
1,1-Dichloroethene	8260	5	BDL	ug/L	11/11/99
cis 1,2-Dichloroethene	8260	5	BDL	ug/L	11/11/99
1,2-Dichloropropane	8260	5	BDL	ug/L	11/11/99
trans 1,2-Dichloroethene	8260	5	BDL	ug/L	11/11/99
cis-1,3-Dichloropropene	8260	5	BDL	ug/L	11/11/99
trans-1,3-Dichloropropene	8260	5	BDL	ug/L	11/11/99
Ethyl Benzene	8260	5	BDL	ug/L	11/11/99
2-Hexanone	8260	10	BDL	ug/L	11/11/99
Methylene Chloride	8260	10	BDL	ug/L	11/11/99
4-Methyl-2-pentanone	8260	10	BDL	ug/L	11/11/99
Styrene	8260	5	BDL	ug/L	11/11/99
1,1,2,2-Tetrachloroethane	8260	5	BDL	ug/L	11/11/99
1,1,1-Trichloroethane	8260	5	BDL	ug/L	11/11/99
1,1,2-Trichloroethane	8260	5	BDL	ug/L	11/11/99
Trichloroethene	8260	5	BDL	ug/L	11/11/99

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 007
Client I.D. Decon 7-10
Sample Date: 11/04/1999
Matrix: Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Trichlorofluoromethane	8260	5	BDL	ug/L	11/11/99
1,2,3-Trichloropropane	8260	5	BDL	ug/L	11/11/99
Tetrachloroethene	8260	5	BDL	ug/L	11/11/99
Toluene	8260	5	BDL	ug/L	11/11/99
Vinyl Chloride	8260	10	BDL	ug/L	11/11/99
Xylenes	8260	5	BDL	ug/L	11/11/99
1,2-Dichloroethane-d4	SURR		122	65-125%	11/11/99
Toluene-D8	SURR		114	78-117%	11/11/99
4-Bromofluorobenzene	SURR		87	76-119%	11/11/99
Dibromofluoromethane	SURR		94	77-126%	11/11/99

Volatiles not received in zero headspace container.

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 003
Client I.D. Decon 11
Sample Date: 11/04/1999
Matrix: Solid/Liquid

TCLP Extract*: 11/17/1999

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/18/99
Arsenic	6010B	0.20	BDL	mg/L	11/18/99
Barium	6010B	0.020	2.2	mg/L	11/18/99
Cadmium	6010B	0.020	BDL	mg/L	11/18/99
Chromium	6010B	0.010	0.022	mg/L	11/18/99
Lead	6010B	0.050	BDL	mg/L	11/18/99
Mercury	7470A	0.0002	BDL	mg/L	11/18/99
Selenium	6010B	0.20	BDL	mg/L	11/18/99
Silver	6010B	0.010	BDL	mg/L	11/18/99

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
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E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 003
Client I.D. Decon 11
Sample Date: 11/04/1999
Matrix: Solid/Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Ignitability Screen	1030		NEG		11/15/99

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
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E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 003
Client I.D. Decon 11
Sample Date: 11/04/1999
Matrix: Solid/Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
VOLATILE ORGANICS					11/16/99
Acetone	8260	0.2	BDL	mg/Kg	11/16/99
Acrolein	8260	0.1	BDL	mg/Kg	11/16/99
Acrylonitrile	8260	0.1	BDL	mg/Kg	11/16/99
Benzene	8260	0.005	BDL	mg/Kg	11/16/99
Bromodichloromethane	8260	0.015	BDL	mg/Kg	11/16/99
Bromoform	8260	0.005	BDL	mg/Kg	11/16/99
Bromomethane	8260	0.01	BDL	mg/Kg	11/16/99
2-Butanone (MEK)	8260	0.1	BDL	mg/Kg	11/16/99
Carbon Disulfide	8260	0.005	BDL	mg/Kg	11/16/99
Carbon Tetrachloride	8260	0.005	BDL	mg/Kg	11/16/99
Chlorobenzene	8260	0.005	BDL	mg/Kg	11/16/99
Chloroethane	8260	0.01	BDL	mg/Kg	11/16/99
2-Chloroethylvinyl Ether	8260	0.01	BDL	mg/Kg	11/16/99
Chloroform	8260	0.05	BDL	mg/Kg	11/16/99
Chloromethane	8260	0.01	BDL	mg/Kg	11/16/99
Chlorodibromomethane	8260	0.005	BDL	mg/Kg	11/16/99
1,4-Dichloro-2-Butene	8260	0.005	BDL	mg/Kg	11/16/99
Dichlorodifluoromethane	8260	0.005	BDL	mg/Kg	11/16/99
1,1-Dichloroethane	8260	0.005	BDL	mg/Kg	11/16/99
1,2-Dichloroethane	8260	0.005	BDL	mg/Kg	11/16/99
1,1-Dichloroethene	8260	0.005	BDL	mg/Kg	11/16/99
1,2-Dichloropropane	8260	0.005	BDL	mg/Kg	11/16/99
trans 1,2-Dichloroethene	8260	0.005	BDL	mg/Kg	11/16/99
cis 1,2-Dichloroethene	8260	0.005	BDL	mg/Kg	11/16/99
trans-1,3-Dichloropropene	8260	0.005	BDL	mg/Kg	11/16/99
cis-1,3-Dichloropropene	8260	0.005	BDL	mg/Kg	11/16/99
Ethyl Benzene	8260	0.01	BDL	mg/Kg	11/16/99
Ethyl Methacrylate	8260	0.005	BDL	mg/Kg	11/16/99
2-Hexanone	8260	0.05	BDL	mg/Kg	11/16/99
Iodomethane	8260	0.005	BDL	mg/Kg	11/16/99
4-Methyl-2-pentanone (MIBK)	8260	0.05	BDL	mg/Kg	11/16/99

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 003
Client I.D. Decon 11
Sample Date: 11/04/1999
Matrix: Solid/Liquid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Methylene Chloride	8260	0.02	BDL	mg/Kg	11/16/99
Styrene	8260	0.005	BDL	mg/Kg	11/16/99
1,1,2,2-Tetrachloroethane	8260	0.005	BDL	mg/Kg	11/16/99
Tetrachloroethene	8260	0.005	BDL	mg/Kg	11/16/99
Toluene	8260	0.005	BDL	mg/Kg	11/16/99
1,1,1-Trichloroethane	8260	0.005	BDL	mg/Kg	11/16/99
1,1,2-Trichloroethane	8260	0.005	BDL	mg/Kg	11/16/99
Trichloroethene	8260	0.005	BDL	mg/Kg	11/16/99
Trichlorofluoromethane	8260	0.005	BDL	mg/Kg	11/16/99
1,2,3-Trichloropropane	8260	0.005	BDL	mg/Kg	11/16/99
Vinyl Acetate	8260	0.05	BDL	mg/Kg	11/16/99
Vinyl Chloride	8260	0.01	BDL	mg/Kg	11/16/99
Xylenes	8260	0.01	BDL	mg/Kg	11/16/99
1,2-Dichloroethane-d4	SURR		99	69 - 124%	11/16/99
Toluene-d8	SURR		85	69 - 118%	11/16/99
4-Bromofluorobenzene	SURR		111	56 - 116%	11/16/99
Dibromofluoromethane	SURR		84	80 - 124%	11/16/99

Note:BDL(Below Detection Limit)

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E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 002
Client I.D. Spill Debris 01
Sample Date: 11/04/1999
Matrix: Solid

TCLP Extract*: 11/17/1999

Analyte	Method	Detection Limit	Results	Units	Analysis Date
TCLP METALS*					11/18/99
Arsenic	6010B	0.20	BDL	mg/L	11/18/99
Barium	6010B	0.020	1.2	mg/L	11/18/99
Cadmium	6010B	0.020	BDL	mg/L	11/18/99
Chromium	6010B	0.010	BDL	mg/L	11/18/99
Lead	6010B	0.050	BDL	mg/L	11/18/99
Mercury	7470A	0.0002	BDL	mg/L	11/18/99
Selenium	6010B	0.20	BDL	mg/L	11/18/99
Silver	6010B	0.010	BDL	mg/L	11/18/99

*Extraction Method: SW 846 1311

Note:BDL(Below Detection Limit)

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ENVIRONMENTAL CONTROL LABORATORIES INC.

Mr. Stephen James
Onyx Environmental
12480B Debartolo Drive
North Jackson, OH 44451

E. C. Lab #: 9911-10006
Received Date: 11/09/99
Report Date: 11/18/99

Purchase Order #:

Subject: Decon

Sample No: 002
Client I.D. Spill Debris 01
Sample Date: 11/04/1999
Matrix: Solid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Ignitability Screen	1030		NEG		11/15/99

Note:BDL(Below Detection Limit)

21337 Drake Road Strongsville, Ohio 44136
(440) 238-6100 FAX: (440) 238-6294

ENVIRONMENTAL CONTROL LABORATORIES INC.

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Sample No: 002
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Analyte	Method	Detection Limit	Results	Units	Analysis Date
VOLATILE ORGANICS					11/16/99
Acetone	8260	1.0	1.74	mg/Kg	11/16/99
Acrolein	8260	0.5	BDL	mg/Kg	11/16/99
Acrylonitrile	8260	0.5	BDL	mg/Kg	11/16/99
Benzene	8260	0.025	BDL	mg/Kg	11/16/99
Bromodichloromethane	8260	0.075	BDL	mg/Kg	11/16/99
Bromoform	8260	0.025	BDL	mg/Kg	11/16/99
Bromomethane	8260	0.05	BDL	mg/Kg	11/16/99
2-Butanone (MEK)	8260	0.5	BDL	mg/Kg	11/16/99
Carbon Disulfide	8260	0.025	BDL	mg/Kg	11/16/99
Carbon Tetrachloride	8260	0.025	BDL	mg/Kg	11/16/99
Chlorobenzene	8260	0.025	BDL	mg/Kg	11/16/99
Chloroethane	8260	0.05	BDL	mg/Kg	11/16/99
2-Chloroethylvinyl Ether	8260	0.05	BDL	mg/Kg	11/16/99
Chloroform	8260	0.25	BDL	mg/Kg	11/16/99
Chloromethane	8260	0.05	BDL	mg/Kg	11/16/99
Chlorodibromomethane	8260	0.025	BDL	mg/Kg	11/16/99
1,4-Dichloro-2-Butene	8260	0.025	BDL	mg/Kg	11/16/99
Dichlorodifluoromethane	8260	0.025	BDL	mg/Kg	11/16/99
1,1-Dichloroethane	8260	0.025	BDL	mg/Kg	11/16/99
1,2-Dichloroethane	8260	0.025	BDL	mg/Kg	11/16/99
1,1-Dichloroethene	8260	0.025	BDL	mg/Kg	11/16/99
1,2-Dichloropropane	8260	0.025	BDL	mg/Kg	11/16/99
trans 1,2-Dichloroethene	8260	0.025	BDL	mg/Kg	11/16/99
cis 1,2-Dichloroethene	8260	0.025	BDL	mg/Kg	11/16/99
trans-1,3-Dichloropropene	8260	0.025	BDL	mg/Kg	11/16/99
cis-1,3-Dichloropropene	8260	0.025	BDL	mg/Kg	11/16/99
Ethyl Benzene	8260	0.05	0.10	mg/Kg	11/16/99
Ethyl Methacrylate	8260	0.025	BDL	mg/Kg	11/16/99
2-Hexanone	8260	0.25	BDL	mg/Kg	11/16/99
Iodomethane	8260	0.025	BDL	mg/Kg	11/16/99
4-Methyl-2-pentanone (MIBK)	8260	0.25	BDL	mg/Kg	11/16/99

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Sample No: 002
Client I.D. Spill Debris 01
Sample Date: 11/04/1999
Matrix: Solid

Analyte	Method	Detection Limit	Results	Units	Analysis Date
Methylene Chloride	8260	0.10	BDL	mg/Kg	11/16/99
Styrene	8260	0.025	0.025	mg/Kg	11/16/99
1,1,2,2-Tetrachloroethane	8260	0.025	BDL	mg/Kg	11/16/99
Tetrachloroethene	8260	0.025	BDL	mg/Kg	11/16/99
Toluene	8260	0.025	0.49	mg/Kg	11/16/99
1,1,1-Trichloroethane	8260	0.025	BDL	mg/Kg	11/16/99
1,1,2-Trichloroethane	8260	0.025	BDL	mg/Kg	11/16/99
Trichloroethene	8260	0.025	BDL	mg/Kg	11/16/99
Trichlorofluoromethane	8260	0.025	BDL	mg/Kg	11/16/99
1,2,3-Trichloropropane	8260	0.025	BDL	mg/Kg	11/16/99
Vinyl Acetate	8260	0.25	BDL	mg/Kg	11/16/99
Vinyl Chloride	8260	0.05	BDL	mg/Kg	11/16/99
Xylenes	8260	0.05	0.61	mg/Kg	11/16/99
1,2-Dichloroethane-d4	SURR		112	69 - 124%	11/16/99
Toluene-d8	SURR		98	69 - 118%	11/16/99
4-Bromofluorobenzene	SURR		85	56 - 116%	11/16/99
Dibromofluoromethane	SURR		91	80 - 124%	11/16/99

Note:BDL(Below Detection Limit)

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December 6, 2000

Mr. Walter Perro
U.S. Army Corps of Engineers
Louisville District
ATTN: CEORL-ED-GE
600 Martin Luther King, Jr. Place
Louisville, KY 40201-0059

SUBJECT: Contract No. DACA27-97-D-0025, Delivery Order 0005, Phase II Remedial Investigation at Load Line 1 and Contract No. DACA62-00-D-0001, Delivery Order CY06, Phase II Remedial Investigation at Load Line 12 and Delivery Order CY08, Winklepeck Burning Grounds Feasibility Study at the Ravenna Army Ammunition Plant, Ravenna, Ohio

RE: Deliverable -- Investigation-Derived Waste Characterization and Disposal Report

Dear Mr. Perro:

Investigative activities conducted during the Phase II Remedial Investigations (RI) of Load Line 1 (September and October 2000) and Load Line 12 (October through November 2000), and the Feasibility Study at Winklepeck Burning Grounds (October through November 2000) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio, resulted in the generation of investigation-derived waste (IDW) consisting of soil, water, and field laboratory reagents. The IDW was generated in the course of sampling of soils and groundwater, field analysis of explosives, and decontamination of sampling equipment. The purpose of this letter report is to characterize and classify two drums of acetone field laboratory waste for disposal. The characterization and classification of the remaining soil and water containers will be completed in separate letter reports to be submitted at a later date because the environmental samples needed for characterization are still pending analysis.

This report includes a summary of IDW generated and its origin (Table 1), comparisons of characterization sampling results to regulatory criteria (Table 2), and classification of the liquid IDW and recommendations for disposal (Table 3). This document follows guidance established by the Facility-Wide Sampling and Analysis Plan (USACE 1996), the Phase II RI Work Plan Addendum No. 2 for Load Line 1 (USACE 2000), the Phase II RI Work Plan Addendum No. 1 for Load Line 12 (USACE 2000), the Winklepeck

Burning Ground FS Work Plan Addendum #1 (USACE 2000), and the Ohio EPA (November 1997) regarding IDW disposition at RVAAP.

Table 1. Summary of RVAAP IDW

DRUM NUMBER	CONTAINER TYPE AND SIZE	CONTENTS AND VOLUME	GENERATION DATE(S)
LL1-004	55-gallon closed-top	acetone and residual sludge	9/11 to 10/04/00
LL12-008	55-gallon closed-top	acetone and residual sludge	10/12 to 11/3/00

For the characterization of liquid IDW as hazardous or non-hazardous, waste characterization samples were collected from each of the two drums. The samples were analyzed for TCLP metals, pH, and ignitability. Only the sample from LL12-008 was additionally analyzed for VOCs, SVOCs, and pesticides. The analytical results above detection limits for the samples are compared directly to the regulatory limits to determine a waste characterization, as shown in Table 2.

Table 2. Comparison of TCLP Waste Characterization Results for Acetone Field Laboratory Wastes to TCLP Criteria

Drum I.D.	Chemical	TCLP Result (mg/L)	TCLP Criterion (mg/L)	TCLP Pass/Fail
LL1-004	Barium	0.30	100	P
	Chromium	0.066	5	P
	pH	3.9	n/a	n/a
	flashpoint	48° F	n/a	n/a
LL12-008	Mercury	0.10	0.20	P

Both drums contain acetone as an extraction solvent and lab rinse during explosives analysis. As indicated in Table 2, detected Toxicity Characteristic (TC) analytes do not exceed the regulatory thresholds of 40 CFR 26.24. Acetone used as an extraction solvent is a RCRA-listed hazardous waste (waste code F003 - spent solvent) and must be disposed as such. The drums are classified as hazardous waste, as shown in Table 3. The liquid IDW contains trace amounts of barium and chromium. These containers are recommended for immediate off-site disposal at a licensed disposal facility.

Table 3. Summary of Final Waste Classification and Recommended Disposal Options

Hazardous Waste			
Container Number	**Medium**	**Waste Criterion**	**Disposal Recommendation**
LL1-004	acetone waste	listed waste/ F0003	Permitted Facility
LL12-008	acetone waste	listed waste/ F0003	Permitted Facility

Based on this classification we have scheduled the disposal of the waste as a hazardous material on December 6, 2000. We will forward copies of the waste manifest, signed by a representative of the U.S. Army, following the waste disposal.

If you have any questions or require additional information, please do not hesitate to contact me at 918-625-7614.

Sincerely,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Kathy Dominic
Environmental Projects Manager

CC: John Jent, USACE
Paul Zorko, USACE
Eileen Mohr, Ohio EPA
Mark Patterson, RVAAP
Kevin Jago, SAIC
Steve Selecman, SAIC

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