SAF-RC-190
100N Field Remediation – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 1/16/13
INITIAL/DATE

COMMENTS:

SDG KP0158 SAF-RC-190

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 600-340

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

11 January 2013

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	1211101
SDG #	KP0158
SAF #	RC-190
Date Received	11/27/12
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	X
Inorganics	

The electronic data deliverable (EDD) has been emailed. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 70 pages.

R:\GROUP\PM\ORLETTE\Hanford\Data\B_ltrs.DOC

CHAIN OF CUSTODY

Lionville Laboratory Use Only

12/1/01

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

KP0158

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client: WC Hanford SAFA RC-190
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: Std TAT: 7 Day

Date Rec'd: 11-27-12 Date Due: 12-4-12

		A			B			C		D					
Refrigerator #		2			2			2		2	1				
#/Type Container	Liquid														
	Solid	1AG			1AG			1AG		1AG	1				
Volume	Liquid														
	Solid	60			60			60		120	1				
Preservatives		–			–			–		–	1				
ANALYSES REQUESTED		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb	PAHs		Metal Hg	CN	TCLP Met	TCLP Hg				
		Lionville Laboratory Use Only													
			8270			8310		METALS		TCLP METALS	1				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected		BNA			PAHs			Metal Hg		TCLP Met	TCLP Hg				
W Water	01	J1R5X8	✓	✓	SOIL	11-20-12	0957		X			X			X		X	X				
WW Waste Water																						
GW Groundwater																						
WST Waste																						
WI Wipe																						
SO Solid																						
S Soil																						
SL Sludge																						
SE Sediment																						
PC Paint Chips																						
O Oil																						
NAL Non-Aqueous Liquid																						
L Leachate																						
A Air																						
T Tissue																						
F Fish																						

Special Instructions:

METALS = HSL + B, Mo, Si (NOTL)

Special Instructions:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/27/12	1000

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-190-118	Page 1 of 1

Collector Q. Stowe	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code ~~8L~~ 8J 11/20/12	**Data Turnaround** ~~21~~ 7 Days 11/20/12		
Project Designation 100N Field Remediation - Soil In-Process	**Sampling Location** 600-340		**SAF No.** RC-190
Ice Chest No. RCC-08-022	**Field Logbook No.** EL-1652-07	**COA** 0603402000	**Method of Shipment** FedEx
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE 11/20/12	**Offsite Property No.** A120646		**Bill of Lading/Air Bill No.** See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	None	Cool 4C	Cool 4C							
Type of Container	G/P	G/P	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	120mL	60mL	60mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	PAHs - 8310							
Sample No. / Matrix * / Sample Date / Sample Time											
J1R5X8 / SOIL / 11-20-12 / 0957	X	X	X	X							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1010 11/20/12	Dennis Newman	1010 11/20/12
Dennis Newman	1400 11/20/12	RCH	1060#1 11-20-12 1400
RCH	1060#1 11-26-12 0840	Fed Ex	
Fed Ex	11-27-12 1000	VICTOR HERNANDEZ	11-27-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wl=Wipe
L=Liquid
V=Vegetation
X=Other

KP0158

REVIEWED BY AJ DATE 11-26-12

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

00000004

SEMIVOLATILES

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X8	1211101-01	Soil	11/20/2012 09:57	11/27/2012 10:00

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-190 KP0158
LVL #: 1211101

W.O. #: 60049-001-001-0001-00
Date Received: 11-27-2012

SEMIVOLATILE

One (1) soil sample was collected on 11-20-2012.

The sample and associated QC samples were extracted 11-30-2012 and analyzed 12-04,05-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for client specified target compounds.

Lionville Laboratory (LvL) is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from a sample that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.

2. The sample was extracted and analyzed within holding time.

3. Non-target compounds were detected in these samples.

4. Due to the sample matrix, samples had an elevated final volume of 2 ml. Reporting limits have been adjusted to reflect this change.

5. All samples required 3-fold instrument dilutions. Reporting limits have been adjusted to reflect the necessary dilutions.

6. One (1) of thirty (30) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12MS209).

7. The method blank was below the reporting limit for all target compounds.

8. All blank spike recoveries were within acceptance criteria

9. One (1) of one hundred and twenty-eight matrix spike recoveries was outside acceptance criteria.

10. The sample was reported on a dry weight basis.

11. All initial calibrations associated with this data set were within acceptance criteria. Per method 8000B/8270C, the attached Table 1 shows the target compounds where the RSD exceeded 15%, and the mean RSD was used for evaluation of the initial calibration. Results associated with these compounds are considered to have greater uncertainty. Refer to the Analysis Batch Sequence Summary Forms to associate the calibration with client samples.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

12. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

13. Internal standard area and retention time criteria were met.

14. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags for Manual Integration").

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hardcopy package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

12/21/12
Date

TABLE 1

TCL - 8000B/8270C COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

MEAN RSD USED FOR EVALUATION: 7.56 CALIBRATION: 1212002

11/30/12 5972N

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,2,4-Trichlorobenzene		Di-n-butyl Phthalate		Surrogates:
	1,2-Dichlorobenzene	✓	Di-n-octyl Phthalate		2-Fluorophenol
	1,3-Dichlorobenzene		Fluoranthene		Phenol-d5
	1,4-Dichlorobenzene		Fluorene		Nitrobenzene-d5
	2,4,5-Trichlorophenol		Hexachlorobenzene		2-Fluorobiphenyl
	2,4,6-Trichlorophenol		Hexachlorobutadiene	✓	2,4,6-Tribromophenol
	2,4-Dichlorophenol	✓	Hexachlorocyclopentadiene		p-Terphenyl-d14
	2,4-Dimethylphenol		Hexachloroethane		
✓	2,4-Dinitrophenol		Indeno[1,2,3-cd]pyrene		
	2,4-Dinitrotoluene		Isophorone		
	2,6-Dinitrotoluene		Naphthalene		
	2-Chloronaphthalene		Nitrobenzene		
	2-Chlorophenol		N-Nitrosodi-n-propylamine		
	2-Methylnaphthalene		N-Nitrosodiphenylamine		
	2-Methylphenol	✓	Pentachlorophenol		
	2-Nitroaniline		Phenanthrene		
	2-Nitrophenol		Phenol		
	3- and/or 4-Methylphenol		Pyrene		
	3,3'-Dichlorobenzidine				
	3-Nitroaniline				
✓	4,6-Dinitro-2-methylphenol		**OLM04.2 TCL addons:**		
	4-Bromophenyl Phenyl Ether		1,1-Biphenyl		
	4-Chloro-3-methylphenol		Atrazine		
	4-Chloroaniline		Benzaldehyde		
	4-Chlorophenyl Phenyl Ether		Caprolactam		
	4-Nitroaniline				
✓	4-Nitrophenol		**NonTCL addons:**		
	Acenaphthene		1,2-Diphenylhydrazine		
	Acenaphthylene		1,4-Dioxane		
	Anthracene		1-Methylnapthalene		
	Benz[a]anthracene		2,3,4,6-Tetrachlorophenol		
	Benzo[a] pyrene		Acetophenone		
	Benzo[b] fluoranthene		Aniline		
	Benzo[g,h,i] perylene		Benzidine		
	Benzo[k] fluoranthene		Benzoic Acid		
	Benzyl alcohol		N-Nitrosodimethylamine		
	Bis(2-chloroethoxy) methane		Pyridine		
	Bis(2-chloroethyl) ether		Tributylphosphate		
	Bis(2-chloroisopropyl) ether				
✓	Bis(2-ethylhexyl) phthalate				
	Butyl Benzyl Phthalate				
	Carbazole				
	Chrysene				
	Dibenz[a,h]anthracene				
	Dibenzofuran				
	Diethyl Phthalate				
	Dimethyl Phthalate				

ANALYSIS BATCH (SEQUENCE) SUMMARY

8270C

Laboratory:	Lionville Laboratory	SDG:	KP0158
Client:	WC-Hanford, Inc.	Project:	RC-190
Sequence:	2120004	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1212002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2120004-TUN1	N113001.D	11/30/12 11:50
Cal Standard	2120004-CAL2	N113003.D	11/30/12 13:00
Cal Standard	2120004-CAL5	N113004.D	11/30/12 13:47
Cal Standard	2120004-CAL1	N113005.D	11/30/12 14:32
Cal Standard	2120004-CAL3	N113006.D	11/30/12 15:17
Cal Standard	2120004-CAL4	N113007.D	11/30/12 16:02
Secondary Cal Check	2120004-SCV1	N113008.D	11/30/12 16:47

ANALYSIS BATCH (SEQUENCE) SUMMARY

8270C

Laboratory:	Lionville Laboratory	SDG:	KP0158
Client:	WC-Hanford, Inc.	Project:	RC-190
Sequence:	2120030	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1212002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2120030-TUN1	N120401.D	12/04/12 13:08
Calibration Check	2120030-CCV1	N120402.D	12/04/12 13:35
LCS	L211273-BS1	N120403.D	12/04/12 15:38
Blank	L211273-BLK1	N120404.D	12/04/12 16:23

ANALYSIS BATCH (SEQUENCE) SUMMARY

8270C

Laboratory:	Lionville Laboratory	SDG:	KP0158
Client:	WC-Hanford, Inc.	Project:	RC-190
Sequence:	2120032	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1212002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2120032-TUN1	N120501.D	12/05/12 10:23
Calibration Check	2120032-CCV1	N120502.D	12/05/12 10:45
J1R5X8	1211101-01	N120503.D	12/05/12 11:40
J1R5X8	L211273-MS1	N120504.D	12/05/12 12:25
J1R5X8	L211273-MSD1	N120505.D	12/05/12 13:11

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS209

Initiator: Sharon Saylor
Date: 12-5-12
Client: WCHanford Inc.

Batch: 1211101
Samples: L211273-BS1, ms1, msd1
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: SOIL
Prep Batch: L211273

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken* __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

(1) Several Acidic Spike recoveries outside QC acceptance limits in L211273-BS1, L211273-ms1, and L211173-msd1 (2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, pentachlorophenol)

(2) <10% recovery of 2,4,6-tribromophenol in J1RSx8, but L211273-ms1 and L211273-msd1 are ok

2. Known or Probable Causes(s) (1) Acidic phenols subject to erratic chromatographic behavior; MS/MSD possible matrix effect, samples required a 3fold dilution and had an elevated final volume of 2mls. (2) possible matrix effect, dilution required for analysis, elevated final volume

Rec 12/6/12

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: narrate

4. Project Manager Instructions...signature/date: 12/21/12

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date 12/21/12

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for diposition.

Route
✓ Lab Manager: Daniels
✓ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
✓ MS BNA: Carden / _____
__ Other: _____

QA-139-A-0208

GLOSSARY

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit, which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP	-	Missed Peak: Manually added peak not found by automatic quantitation program.
PA	-	Peak Assignment: quantitation report was changed to reflect correct peak assignment.
RI	-	Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene, which are poorly resolved on the BNA column.
SP	-	Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
CB	-	Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background
PI	-	Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/06/2012 12:06

J1R5X8
1211101-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,2-Dichlorobenzene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,3-Dichlorobenzene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,4-Dichlorobenzene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,5-Trichlorophenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,6-Trichlorophenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dichlorophenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dimethylphenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrophenol	11000	U	11000	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrotoluene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,6-Dinitrotoluene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chloronaphthalene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chlorophenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylnaphthalene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylphenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitroaniline	11000	U	11000	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitrophenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3,3'-Dichlorobenzidine	4400	U	4400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3-Nitroaniline	11000	U	11000	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4,6-Dinitro-2-methylphenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Bromophenyl Phenyl Ether	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloro-3-methylphenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloroaniline	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chlorophenyl Phenyl Ether	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3- and/or 4-Methylphenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitroaniline	11000	U	11000	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitrophenol	11000	U	11000	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthylene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Anthracene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benz[a]anthracene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[a] pyrene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[b] fluoranthene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[g,h,i] perylene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[k] fluoranthene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroethoxy) methane	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

J1R5X8

1211101-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroisopropyl) ether	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-ethylhexyl) phthalate	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Butyl Benzyl Phthalate	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Carbazole	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Chrysene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenz[a,h]anthracene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenzofuran	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Diethyl Phthalate	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dimethyl Phthalate	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-butyl Phthalate	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-octyl Phthalate	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluoranthene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluorene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobenzene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobutadiene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorocyclopentadiene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachloroethane	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Indeno[1,2,3-cd]pyrene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Isophorone	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Naphthalene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Nitrobenzene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodi-n-propylamine	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodiphenylamine	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pentachlorophenol	11000	U	11000	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenanthrene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenol	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pyrene	2200	U	2200	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 1	**490**	A, D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 2	**1290**	A, B, D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 3	**72800**	A, B, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 4	**593**	A, B, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Surrogate: 2-Fluorophenol	*59 %*		*25-121*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Phenol-d5	*61 %*		*24-113*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*55 %*		*23-120*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*65 %*		*30-115*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

J1R5X8

1211101-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2,4,6-Tribromophenol	*9 % **	*19-122*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*58 %*	*18-137*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C										
Blank (L211273-BLK1)				Prepared: 11/30/2012 Analyzed: 12/04/2012						
1,2,4-Trichlorobenzene	330	U	330	ug/kg wet						
1,2-Dichlorobenzene	330	U	330	ug/kg wet						
1,3-Dichlorobenzene	330	U	330	ug/kg wet						
1,4-Dichlorobenzene	330	U	330	ug/kg wet						
2,4,5-Trichlorophenol	330	U	330	ug/kg wet						
2,4,6-Trichlorophenol	330	U	330	ug/kg wet						
2,4-Dichlorophenol	330	U	330	ug/kg wet						
2,4-Dimethylphenol	330	U	330	ug/kg wet						
2,4-Dinitrophenol	1650	U	1650	ug/kg wet						
2,4-Dinitrotoluene	330	U	330	ug/kg wet						
2,6-Dinitrotoluene	330	U	330	ug/kg wet						
2-Chloronaphthalene	330	U	330	ug/kg wet						
2-Chlorophenol	330	U	330	ug/kg wet						
2-Methylnaphthalene	330	U	330	ug/kg wet						
2-Methylphenol	330	U	330	ug/kg wet						
2-Nitroaniline	1650	U	1650	ug/kg wet						
2-Nitrophenol	330	U	330	ug/kg wet						
3,3'-Dichlorobenzidine	660	U	660	ug/kg wet						
3-Nitroaniline	1650	U	1650	ug/kg wet						
4,6-Dinitro-2-methylphenol	330	U	330	ug/kg wet						
4-Bromophenyl Phenyl Ether	330	U	330	ug/kg wet						
4-Chloro-3-methylphenol	330	U	330	ug/kg wet						
4-Chloroaniline	330	U	330	ug/kg wet						
4-Chlorophenyl Phenyl Ether	330	U	330	ug/kg wet						
3- and/or 4-Methylphenol	330	U	330	ug/kg wet						
4-Nitroaniline	1650	U	1650	ug/kg wet						
4-Nitrophenol	1650	U	1650	ug/kg wet						
Acenaphthene	330	U	330	ug/kg wet						
Acenaphthylene	330	U	330	ug/kg wet						
Anthracene	330	U	330	ug/kg wet						
Benz[a]anthracene	330	U	330	ug/kg wet						
Benzo[a] pyrene	330	U	330	ug/kg wet						
Benzo[b] fluoranthene	330	U	330	ug/kg wet						
Benzo[g,h,i] perylene	330	U	330	ug/kg wet						
Benzo[k] fluoranthene	330	U	330	ug/kg wet						
Bis(2-chloroethoxy) methane	330	U	330	ug/kg wet						

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C										
Blank (L211273-BLK1)				Prepared: 11/30/2012 Analyzed: 12/04/2012						
Bis(2-chloroethyl) ether	330	U	330	ug/kg wet						
Bis(2-chloroisopropyl) ether	330	U	330	ug/kg wet						
Bis(2-ethylhexyl) phthalate	330	U	330	ug/kg wet						
Butyl Benzyl Phthalate	330	U	330	ug/kg wet						
Carbazole	330	U	330	ug/kg wet						
Chrysene	330	U	330	ug/kg wet						
Dibenz[a,h]anthracene	330	U	330	ug/kg wet						
Dibenzofuran	330	U	330	ug/kg wet						
Diethyl Phthalate	330	U	330	ug/kg wet						
Dimethyl Phthalate	330	U	330	ug/kg wet						
Di-n-butyl Phthalate	330	U	330	ug/kg wet						
Di-n-octyl Phthalate	330	U	330	ug/kg wet						
Fluoranthene	330	U	330	ug/kg wet						
Fluorene	330	U	330	ug/kg wet						
Hexachlorobenzene	330	U	330	ug/kg wet						
Hexachlorobutadiene	330	U	330	ug/kg wet						
Hexachlorocyclopentadiene	330	U	330	ug/kg wet						
Hexachloroethane	330	U	330	ug/kg wet						
Indeno[1,2,3-cd]pyrene	330	U	330	ug/kg wet						
Isophorone	330	U	330	ug/kg wet						
Naphthalene	330	U	330	ug/kg wet						
Nitrobenzene	330	U	330	ug/kg wet						
N-Nitrosodi-n-propylamine	330	U	330	ug/kg wet						
N-Nitrosodiphenylamine	330	U	330	ug/kg wet						
Pentachlorophenol	1650	U	1650	ug/kg wet						
Phenanthrene	330	U	330	ug/kg wet						
Phenol	330	U	330	ug/kg wet						
Pyrene	330	U	330	ug/kg wet						
Unknown 1 TICs	142	J		ug/kg wet						
Aldol Condensate 2	54000	A, J		ug/kg wet						
Aldol Condensate 4	278	A, J		ug/kg wet						
Aldol Condensate 3	673	A, J		ug/kg wet						
Aldol Condensate 1 RAW 12/6/12	1510	A, J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1370*			*ug/kg wet*	*2500.0*		*55*	*25-121*		
Surrogate: Phenol-d5	*1450*			*ug/kg wet*	*2500.0*		*58*	*24-113*		
Surrogate: Nitrobenzene-d5	*992*			*ug/kg wet*	*1666.7*		*60*	*23-120*		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C									
Blank (L211273-BLK1)			Prepared: 11/30/2012 Analyzed: 12/04/2012						
Surrogate: 2-Fluorobiphenyl	*1030*		*ug/kg wet*	*1666.7*		*62*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*988*		*ug/kg wet*	*2500.0*		*40*	*19-122*		
Surrogate: p-Terphenyl-d14	*1030*		*ug/kg wet*	*1666.7*		*62*	*18-137*		
LCS (L211273-BS1)			Prepared: 11/30/2012 Analyzed: 12/04/2012						
1,2,4-Trichlorobenzene	997		ug/kg wet	2000.0		50	45-110		
1,2-Dichlorobenzene	1070		ug/kg wet	2000.0		53	45-105		
1,3-Dichlorobenzene	1020		ug/kg wet	2000.0		51	40-100		
1,4-Dichlorobenzene	1030		ug/kg wet	2000.0		51	35-105		
2,4,5-Trichlorophenol	1110		ug/kg wet	2000.0		55	30-140		
2,4,6-Trichlorophenol	912		ug/kg wet	2000.0		46	20-110		
2,4-Dichlorophenol	1030		ug/kg wet	2000.0		51	40-110		
2,4-Dimethylphenol	1160		ug/kg wet	2000.0		58	30-105		
2,4-Dinitrophenol	121		ug/kg wet	2000.0		6*	25-130		
2,4-Dinitrotoluene	1190		ug/kg wet	2000.0		59	50-115		
2,6-Dinitrotoluene	1170		ug/kg wet	2000.0		59	40-120		
2-Chloronaphthalene	1140		ug/kg wet	2000.0		57	45-115		
2-Chlorophenol	1120		ug/kg wet	2000.0		56	45-105		
2-Methylnaphthalene	1030		ug/kg wet	2000.0		52	45-110		
2-Methylphenol	1190		ug/kg wet	2000.0		60	40-120		
2-Nitroaniline	1390		ug/kg wet	2000.0		70	45-120		
2-Nitrophenol	1090		ug/kg wet	2000.0		55	40-110		
3,3'-Dichlorobenzidine	1030		ug/kg wet	2000.0		52	15-130		
3-Nitroaniline	1180		ug/kg wet	2000.0		59	40-130		
4,6-Dinitro-2-methylphenol	372		ug/kg wet	2000.0		19*	20-140		
4-Bromophenyl Phenyl Ether	1150		ug/kg wet	2000.0		57	45-115		
4-Chloro-3-methylphenol	1160		ug/kg wet	2000.0		58	35-115		
4-Chloroaniline	985		ug/kg wet	2000.0		49	10-100		
4-Chlorophenyl Phenyl Ether	1120		ug/kg wet	2000.0		56	45-110		
3- and/or 4-Methylphenol	1190		ug/kg wet	2000.0		60	40-120		
4-Nitroaniline	1280		ug/kg wet	2000.0		64	40-130		
4-Nitrophenol	1060		ug/kg wet	2000.0		53	15-140		
Acenaphthene	1160		ug/kg wet	2000.0		58	45-110		
Acenaphthylene	1230		ug/kg wet	2000.0		61	45-115		
Anthracene	1160		ug/kg wet	2000.0		58	45-130		
Benz[a]anthracene	1230		ug/kg wet	2000.0		61	45-130		
Benzo[a] pyrene	1170		ug/kg wet	2000.0		59	45-130		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C									
LCS (L211273-BS1)			Prepared: 11/30/2012 Analyzed: 12/04/2012						
Benzo[b] fluoranthene	1180		ug/kg wet	2000.0		59	40-130		
Benzo[g,h,i] perylene	1170		ug/kg wet	2000.0		59	45-125		
Benzo[k] fluoranthene	1250		ug/kg wet	2000.0		63	45-125		
Bis(2-chloroethoxy) methane	1130		ug/kg wet	2000.0		56	45-110		
Bis(2-chloroethyl) ether	1210		ug/kg wet	2000.0		60	40-110		
Bis(2-chloroisopropyl) ether	1280		ug/kg wet	2000.0		64	30-115		
Bis(2-ethylhexyl) phthalate	1280		ug/kg wet	2000.0		64	40-145		
Butyl Benzyl Phthalate	1290		ug/kg wet	2000.0		64	50-125		
Carbazole	1170		ug/kg wet	2000.0		59	40-140		
Chrysene	1260		ug/kg wet	2000.0		63	45-130		
Dibenz[a,h]anthracene	1150		ug/kg wet	2000.0		57	45-125		
Dibenzofuran	1170		ug/kg wet	2000.0		59	45-120		
Diethyl Phthalate	1160		ug/kg wet	2000.0		58	50-125		
Dimethyl Phthalate	1130		ug/kg wet	2000.0		56	45-130		
Di-n-butyl Phthalate	1150		ug/kg wet	2000.0		58	50-130		
Di-n-octyl Phthalate	1220		ug/kg wet	2000.0		61	40-150		
Fluoranthene	1140		ug/kg wet	2000.0		57	45-130		
Fluorene	1150		ug/kg wet	2000.0		58	45-120		
Hexachlorobenzene	1180		ug/kg wet	2000.0		59	45-130		
Hexachlorobutadiene	1080		ug/kg wet	2000.0		54	45-105		
Hexachlorocyclopentadiene	776		ug/kg wet	2000.0		39	10-100		
Hexachloroethane	1030		ug/kg wet	2000.0		51	35-110		
Indeno[1,2,3-cd]pyrene	1160		ug/kg wet	2000.0		58	45-130		
Isophorone	1140		ug/kg wet	2000.0		57	40-110		
Naphthalene	1170		ug/kg wet	2000.0		58	40-110		
Nitrobenzene	1120		ug/kg wet	2000.0		56	40-105		
N-Nitrosodi-n-propylamine	1320		ug/kg wet	2000.0		66	30-130		
N-Nitrosodiphenylamine	1220		ug/kg wet	2000.0		61	50-120		
Pentachlorophenol	354		ug/kg wet	2000.0		18*	25-120		
Phenanthrene	1180		ug/kg wet	2000.0		59	50-120		
Phenol	1210		ug/kg wet	2000.0		60	40-115		
Pyrene	1230		ug/kg wet	2000.0		61	45-125		
Surrogate: 2-Fluorophenol	*1400*		*ug/kg wet*	*2500.0*		*56*	*25-121*		
Surrogate: Phenol-d5	*1520*		*ug/kg wet*	*2500.0*		*61*	*24-113*		
Surrogate: Nitrobenzene-d5	*988*		*ug/kg wet*	*1666.7*		*59*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*995*		*ug/kg wet*	*1666.7*		*60*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*849*		*ug/kg wet*	*2500.0*		*34*	*19-122*		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C										
LCS (L211273-BS1)				Prepared: 11/30/2012 Analyzed: 12/04/2012						
Surrogate: p-Terphenyl-d14	*936*			*ug/kg wet*	*1666.7*		*56*	*18-137*		
Matrix Spike (L211273-MS1)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
1,2,4-Trichlorobenzene	1510	D		ug/kg dry	2210.5	2200 U	68	45-110		
1,2-Dichlorobenzene	1560	D		ug/kg dry	2210.5	2200 U	71	45-105		
1,3-Dichlorobenzene	1460	D		ug/kg dry	2210.5	2200 U	66	40-100		
1,4-Dichlorobenzene	1500	D		ug/kg dry	2210.5	2200 U	68	35-105		
2,4,5-Trichlorophenol	1050	D		ug/kg dry	2210.5	2200 U	47	30-140		
2,4,6-Trichlorophenol	680	D		ug/kg dry	2210.5	2200 U	31	20-110		
2,4-Dichlorophenol	1260	D		ug/kg dry	2210.5	2200 U	57	40-110		
2,4-Dimethylphenol	1560	D		ug/kg dry	2210.5	2200 U	71	30-105		
2,4-Dinitrophenol	403	D		ug/kg dry	2210.5	11000 U	18*	25-130		
2,4-Dinitrotoluene	1280	D		ug/kg dry	2210.5	2200 U	58	50-115		
2,6-Dinitrotoluene	1470	D		ug/kg dry	2210.5	2200 U	66	40-120		
2-Chloronaphthalene	1630	D		ug/kg dry	2210.5	2200 U	74	45-115		
2-Chlorophenol	1560	D		ug/kg dry	2210.5	2200 U	71	45-105		
2-Methylnaphthalene	1550	D		ug/kg dry	2210.5	2200 U	70	45-110		
2-Methylphenol	1560	D		ug/kg dry	2210.5	2200 U	71	40-120		
2-Nitroaniline	1390	D		ug/kg dry	2210.5	11000 U	63	45-120		
2-Nitrophenol	1350	D		ug/kg dry	2210.5	2200 U	61	40-110		
3,3'-Dichlorobenzidine	1240	D		ug/kg dry	2210.5	4400 U	56	15-130		
3-Nitroaniline	1260	D		ug/kg dry	2210.5	11000 U	57	40-130		
4,6-Dinitro-2-methylphenol	741	D		ug/kg dry	2210.5	2200 U	33	20-140		
4-Bromophenyl Phenyl Ether	1590	D		ug/kg dry	2210.5	2200 U	72	45-115		
4-Chloro-3-methylphenol	1330	D		ug/kg dry	2210.5	2200 U	60	35-115		
4-Chloroaniline	1420	D		ug/kg dry	2210.5	2200 U	64	10-100		
4-Chlorophenyl Phenyl Ether	1610	D		ug/kg dry	2210.5	2200 U	73	45-110		
3- and/or 4-Methylphenol	1480	D		ug/kg dry	2210.5	2200 U	67	40-120		
4-Nitroaniline	1170	D		ug/kg dry	2210.5	11000 U	53	40-130		
4-Nitrophenol	653	D		ug/kg dry	2210.5	11000 U	30	15-140		
Acenaphthene	1700	D		ug/kg dry	2210.5	2200 U	77	45-110		
Acenaphthylene	1670	D		ug/kg dry	2210.5	2200 U	75	45-115		
Anthracene	1570	D		ug/kg dry	2210.5	2200 U	71	45-130		
Benz[a]anthracene	1580	D		ug/kg dry	2210.5	2200 U	72	45-130		
Benzo[a] pyrene	1300	D		ug/kg dry	2210.5	2200 U	59	45-130		
Benzo[b] fluoranthene	1600	D		ug/kg dry	2210.5	2200 U	72	40-130		
Benzo[g,h,i] perylene	1470	D		ug/kg dry	2210.5	2200 U	66	45-125		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C										
Matrix Spike (L211273-MS1)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
Benzo[k] fluoranthene	1560	D		ug/kg dry	2210.5	2200 U	70	45-125		
Bis(2-chloroethoxy) methane	1680	D		ug/kg dry	2210.5	2200 U	76	45-110		
Bis(2-chloroethyl) ether	1680	D		ug/kg dry	2210.5	2200 U	76	40-110		
Bis(2-chloroisopropyl) ether	1840	D		ug/kg dry	2210.5	2200 U	83	30-115		
Bis(2-ethylhexyl) phthalate	1330	D		ug/kg dry	2210.5	2200 U	60	40-145		
Butyl Benzyl Phthalate	1610	D		ug/kg dry	2210.5	2200 U	73	50-125		
Carbazole	1620	D		ug/kg dry	2210.5	2200 U	73	40-140		
Chrysene	1810	D		ug/kg dry	2210.5	2200 U	82	45-130		
Dibenz[a,h]anthracene	1350	D		ug/kg dry	2210.5	2200 U	61	45-125		
Dibenzofuran	1720	D		ug/kg dry	2210.5	2200 U	78	45-120		
Diethyl Phthalate	1570	D		ug/kg dry	2210.5	2200 U	71	50-125		
Dimethyl Phthalate	1590	D		ug/kg dry	2210.5	2200 U	72	45-130		
Di-n-butyl Phthalate	1390	D		ug/kg dry	2210.5	2200 U	63	50-130		
Di-n-octyl Phthalate	1130	D		ug/kg dry	2210.5	2200 U	51	40-150		
Fluoranthene	1530	D		ug/kg dry	2210.5	2200 U	69	45-130		
Fluorene	1620	D		ug/kg dry	2210.5	2200 U	73	45-120		
Hexachlorobenzene	1780	D		ug/kg dry	2210.5	2200 U	80	45-130		
Hexachlorobutadiene	1600	D		ug/kg dry	2210.5	2200 U	72	45-105		
Hexachlorocyclopentadiene	916	D		ug/kg dry	2210.5	2200 U	41	10-100		
Hexachloroethane	1370	D		ug/kg dry	2210.5	2200 U	62	35-110		
Indeno[1,2,3-cd]pyrene	1300	D		ug/kg dry	2210.5	2200 U	59	45-130		
Isophorone	1450	D		ug/kg dry	2210.5	2200 U	65	40-110		
Naphthalene	1880	D		ug/kg dry	2210.5	2200 U	85	40-110		
Nitrobenzene	1620	D		ug/kg dry	2210.5	2200 U	73	40-105		
N-Nitrosodi-n-propylamine	1600	D		ug/kg dry	2210.5	2200 U	72	30-130		
N-Nitrosodiphenylamine	1710	D		ug/kg dry	2210.5	2200 U	77	50-120		
Pentachlorophenol	167	D		ug/kg dry	2210.5	11000 U	8*	25-120		
Phenanthrene	1810	D		ug/kg dry	2210.5	2200 U	82	50-120		
Phenol	1650	D		ug/kg dry	2210.5	2200 U	75	40-115		
Pyrene	1860	D		ug/kg dry	2210.5	2200 U	84	45-125		
Surrogate: 2-Fluorophenol	*2040*			*ug/kg dry*	*2763.2*		*74*	*25-121*		
Surrogate: Phenol-d5	*2100*			*ug/kg dry*	*2763.2*		*76*	*24-113*		
Surrogate: Nitrobenzene-d5	*1380*			*ug/kg dry*	*1842.1*		*75*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1500*			*ug/kg dry*	*1842.1*		*82*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*598*			*ug/kg dry*	*2763.2*		*22*	*19-122*		
Surrogate: p-Terphenyl-d14	*1470*			*ug/kg dry*	*1842.1*		*80*	*18-137*		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C										
Matrix Spike Dup (L211273-MSD1)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
1,2,4-Trichlorobenzene	1490	D		ug/kg dry	2216.4	2200 U	67	45-110	2	40
1,2-Dichlorobenzene	1650	D		ug/kg dry	2216.4	2200 U	74	45-105	5	40
1,3-Dichlorobenzene	1560	D		ug/kg dry	2216.4	2200 U	70	40-100	6	40
1,4-Dichlorobenzene	1590	D		ug/kg dry	2216.4	2200 U	72	35-105	6	40
2,4,5-Trichlorophenol	1180	D		ug/kg dry	2216.4	2200 U	53	30-140	12	40
2,4,6-Trichlorophenol	807	D		ug/kg dry	2216.4	2200 U	36	20-110	17	40
2,4-Dichlorophenol	1210	D		ug/kg dry	2216.4	2200 U	55	40-110	4	40
2,4-Dimethylphenol	1600	D		ug/kg dry	2216.4	2200 U	72	30-105	2	40
2,4-Dinitrophenol	496	D		ug/kg dry	2216.4	11000 U	22*	25-130	20	40
2,4-Dinitrotoluene	1370	D		ug/kg dry	2216.4	2200 U	62	50-115	7	40
2,6-Dinitrotoluene	1570	D		ug/kg dry	2216.4	2200 U	71	40-120	6	40
2-Chloronaphthalene	1710	D		ug/kg dry	2216.4	2200 U	77	45-115	4	40
2-Chlorophenol	1630	D		ug/kg dry	2216.4	2200 U	74	45-105	4	40
2-Methylnaphthalene	1540	D		ug/kg dry	2216.4	2200 U	69	45-110	1	40
2-Methylphenol	1630	D		ug/kg dry	2216.4	2200 U	73	40-120	4	40
2-Nitroaniline	1560	D		ug/kg dry	2216.4	11000 U	70	45-120	11	40
2-Nitrophenol	1340	D		ug/kg dry	2216.4	2200 U	61	40-110	0.9	40
3,3'-Dichlorobenzidine	1320	D		ug/kg dry	2216.4	4400 U	60	15-130	7	40
3-Nitroaniline	1360	D		ug/kg dry	2216.4	11000 U	61	40-130	7	40
4,6-Dinitro-2-methylphenol	874	D		ug/kg dry	2216.4	2200 U	39	20-140	16	40
4-Bromophenyl Phenyl Ether	1720	D		ug/kg dry	2216.4	2200 U	78	45-115	8	40
4-Chloro-3-methylphenol	1320	D		ug/kg dry	2216.4	2200 U	60	35-115	0.9	40
4-Chloroaniline	1290	D		ug/kg dry	2216.4	2200 U	58	10-100	9	40
4-Chlorophenyl Phenyl Ether	1680	D		ug/kg dry	2216.4	2200 U	76	45-110	4	40
3- and/or 4-Methylphenol	1560	D		ug/kg dry	2216.4	2200 U	70	40-120	5	40
4-Nitroaniline	1350	D		ug/kg dry	2216.4	11000 U	61	40-130	14	40
4-Nitrophenol	714	D		ug/kg dry	2216.4	11000 U	32	15-140	9	40
Acenaphthene	1790	D		ug/kg dry	2216.4	2200 U	81	45-110	5	40
Acenaphthylene	1780	D		ug/kg dry	2216.4	2200 U	80	45-115	6	40
Anthracene	1730	D		ug/kg dry	2216.4	2200 U	78	45-130	9	40
Benz[a]anthracene	1740	D		ug/kg dry	2216.4	2200 U	79	45-130	9	40
Benzo[a] pyrene	1460	D		ug/kg dry	2216.4	2200 U	66	45-130	11	40
Benzo[b] fluoranthene	1630	D		ug/kg dry	2216.4	2200 U	74	40-130	2	40
Benzo[g,h,i] perylene	1610	D		ug/kg dry	2216.4	2200 U	73	45-125	9	40
Benzo[k] fluoranthene	1820	D		ug/kg dry	2216.4	2200 U	82	45-125	15	40
Bis(2-chloroethoxy) methane	1670	D		ug/kg dry	2216.4	2200 U	75	45-110	0.6	40

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:06

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211273 - SW 3540C										
Matrix Spike Dup (L211273-MSD1)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
Bis(2-chloroethyl) ether	1770	D		ug/kg dry	2216.4	2200 U	80	40-110	5	40
Bis(2-chloroisopropyl) ether	1900	D		ug/kg dry	2216.4	2200 U	86	30-115	3	40
Bis(2-ethylhexyl) phthalate	1440	D		ug/kg dry	2216.4	2200 U	65	40-145	8	40
Butyl Benzyl Phthalate	1770	D		ug/kg dry	2216.4	2200 U	80	50-125	9	40
Carbazole	1780	D		ug/kg dry	2216.4	2200 U	80	40-140	9	40
Chrysene	2000	D		ug/kg dry	2216.4	2200 U	90	45-130	10	40
Dibenz[a,h]anthracene	1480	D		ug/kg dry	2216.4	2200 U	67	45-125	9	40
Dibenzofuran	1830	D		ug/kg dry	2216.4	2200 U	83	45-120	6	40
Diethyl Phthalate	1730	D		ug/kg dry	2216.4	2200 U	78	50-125	9	40
Dimethyl Phthalate	1740	D		ug/kg dry	2216.4	2200 U	78	45-130	9	40
Di-n-butyl Phthalate	1510	D		ug/kg dry	2216.4	2200 U	68	50-130	8	40
Di-n-octyl Phthalate	1350	D		ug/kg dry	2216.4	2200 U	61	40-150	17	40
Fluoranthene	1730	D		ug/kg dry	2216.4	2200 U	78	45-130	12	40
Fluorene	1770	D		ug/kg dry	2216.4	2200 U	80	45-120	9	40
Hexachlorobenzene	1970	D		ug/kg dry	2216.4	2200 U	89	45-130	10	40
Hexachlorobutadiene	1580	D		ug/kg dry	2216.4	2200 U	71	45-105	1	40
Hexachlorocyclopentadiene	1020	D		ug/kg dry	2216.4	2200 U	46	10-100	10	40
Hexachloroethane	1480	D		ug/kg dry	2216.4	2200 U	67	35-110	7	40
Indeno[1,2,3-cd]pyrene	1450	D		ug/kg dry	2216.4	2200 U	66	45-130	11	40
Isophorone	1460	D		ug/kg dry	2216.4	2200 U	66	40-110	0.4	40
Naphthalene	1860	D		ug/kg dry	2216.4	2200 U	84	40-110	1	40
Nitrobenzene	1590	D		ug/kg dry	2216.4	2200 U	72	40-105	2	40
N-Nitrosodi-n-propylamine	1680	D		ug/kg dry	2216.4	2200 U	76	30-130	5	40
N-Nitrosodiphenylamine	1890	D		ug/kg dry	2216.4	2200 U	85	50-120	10	40
Pentachlorophenol	334	D		ug/kg dry	2216.4	11000 U	15*	25-120	66*	40
Phenanthrene	1980	D		ug/kg dry	2216.4	2200 U	89	50-120	8	40
Phenol	1700	D		ug/kg dry	2216.4	2200 U	77	40-115	3	40
Pyrene	1980	D		ug/kg dry	2216.4	2200 U	89	45-125	6	40
Surrogate: 2-Fluorophenol	*1980*			*ug/kg dry*	*2770.5*		*72*	*25-121*		
Surrogate: Phenol-d5	*2050*			*ug/kg dry*	*2770.5*		*74*	*24-113*		
Surrogate: Nitrobenzene-d5	*1250*			*ug/kg dry*	*1847.0*		*68*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1460*			*ug/kg dry*	*1847.0*		*79*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*675*			*ug/kg dry*	*2770.5*		*24*	*19-122*		
Surrogate: p-Terphenyl-d14	*1400*			*ug/kg dry*	*1847.0*		*76*	*18-137*		

PREPARATION BENCH SHEET

L211273

Lionville Laboratory

Printed: 12/6/2012 11:31:31AM

Matrix: Solid **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1201561**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211101-01	8270C TCL SVOC	11/30/2012 15:25	30.02	2				500	WC-Hanford, Inc.	
1211102-01	8270C TCL SVOC	11/30/2012 15:25	29.87	4				500	WC-Hanford, Inc.	
1211102-02	8270C TCL SVOC	11/30/2012 15:25	30.81	4				500	WC-Hanford, Inc.	
1211102-03	8270C TCL SVOC	11/30/2012 15:25	30.07	4				500	WC-Hanford, Inc.	
1211102-04	8270C TCL SVOC	11/30/2012 15:25	30.09	2				500	WC-Hanford, Inc.	
1211103-01	8270C TCL SVOC	11/30/2012 15:25	30.67	10				500	WC-Hanford, Inc.	
1211103-02	8270C TCL SVOC	11/30/2012 15:25	30.36	10				500	WC-Hanford, Inc.	
L211273-BLK1	QC	11/30/2012 15:25	30	1				500		
L211273-BS1	QC	11/30/2012 15:25	30	1	1201082		600	500		
L211273-MS1	QC	11/30/2012 15:25	30.17	2	1201082	1211101-01	600	500		
L211273-MS2	QC	11/30/2012 15:25	30.52	2	1201082	1211102-04	600	500		
L211273-MS3	QC	11/30/2012 15:25	30.4	10	1201082	1211103-02	600	500		
L211273-MSD1	QC	11/30/2012 15:25	30.09	2	1201082	1211101-01	600	500		
L211273-MSD2	QC	11/30/2012 15:25	30.01	2	1201082	1211102-04	600	500		
L211273-MSD3	QC	11/30/2012 15:25	30.08	10	1201082	1211103-02	600	500		

Revision for initial wt. L211273-MSD1 [illegible] 12/6/12

Extracts Relinquished By Date Extracts Received By Date

PREPARATION BENCH SHEET

L211273

Lionville Laboratory

Printed: 12/4/2012 3:24:23PM

000000029

Matrix: Solid

Prepared using: Extraction - SW 3540C

Surrogate used: 1201561

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211101-01	8270C TCL SVOC	11/30/2012 15:25	30.02	2				500	WC-Hanford, Inc.	
1211102-01	8270C TCL SVOC	11/30/2012 15:25	29.87	4				500	WC-Hanford, Inc.	
1211102-02	8270C TCL SVOC	11/30/2012 15:25	30.81	4				500	WC-Hanford, Inc.	
1211102-03	8270C TCL SVOC	11/30/2012 15:25	30.07	4				500	WC-Hanford, Inc.	
1211102-04	8270C TCL SVOC	11/30/2012 15:25	30.09	2				500	WC-Hanford, Inc.	
1211103-01	8270C TCL SVOC	11/30/2012 15:25	30.67	10				500	WC-Hanford, Inc.	
1211103-02	8270C TCL SVOC	11/30/2012 15:25	30.36	10				500	WC-Hanford, Inc.	
L211273-BLK1	QC	11/30/2012 15:25	30	1				500		
L211273-BS1	QC	11/30/2012 15:25	30	1	1201082		600	500		
L211273-MS1	QC	11/30/2012 15:25	30.17	2	1201082	1211101-01	600	500		
L211273-MS2	QC	11/30/2012 15:25	30.52	2	1201082	1211102-04	600	500		
L211273-MS3	QC	11/30/2012 15:25	30.4	10	1201082	1211103-02	600	500		
L211273-MSD1	QC	11/30/2012 15:25	30.67	2	1201082	1211101-01	600	500		
L211273-MSD2	QC	11/30/2012 15:25	30.01	2	1201082	1211102-04	600	500		
L211273-MSD3	QC	11/30/2012 15:25	30.08	10	1201082	1211103-02	600	500		

Extracts Relinquished By — Date 12/4/12 1525

Extracts Received By — Date 12/4/12 1530

PAHs

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 13:59

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X8	1211101-01	Soil	11/20/2012 09:57	11/27/2012 10:00

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
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Case Narrative

Client: WC-HANFORD RC-190 KP0158
LVL #: 1211101

W.O. #: 60049-001-001-0001-00
Date Received: 11-27-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) soil sample was collected on 11-20-2012.

The samples and associated QC samples were extracted 11-29-2012 and analyzed 12-05-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

Lionville Laboratory (LvL) is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within QC acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within QC acceptance criteria.
6. All matrix spike recoveries were within QC acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. The samples were reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

12/21/12
Date

r:\group\data\2012\pah 8310\wc hanford\1211101rgc.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

LIONVILLE LABORATORY INC.

GLOSSARY OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.
P	=	This flag is used for a dual column analysis (i.e. pesticides/PCB/herbicides) when there is greater than 40% difference for detected concentrations between the two GC columns; the lower of the two values is reported on Form 1 and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
NPM	=	No pattern match for multi-component target analytes.

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 13:59

J1R5X8
1211101-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**4.52**		3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Acenaphthylene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Acenaphthene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Fluorene	**1.08**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Phenanthrene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Anthracene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Fluoranthene	**1.81**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Indeno[1,2,3-cd]pyrene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Pyrene	**1.57**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Benz[a]anthracene	**1.41**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Chrysene	**1.27**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Benzo[b] fluoranthene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Benzo[k] fluoranthene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Benzo[a] pyrene	**0.994**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Dibenz[a,h]anthracene	3.61	U	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Benzo[g,h,i] perylene	**1.07**	J	3.61	ug/kg dry	1	L211261	11/29/2012	12/05/2012	8310
Surrogate: Triphenylene	*81 %*		*68-129*			*L211261*	*11/29/2012*	*12/05/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 13:59

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211261 - SW 3540C										
Blank (L211261-BLK1)				Prepared: 11/29/2012 Analyzed: 12/05/2012						
Naphthalene	3.33	U	3.33	ug/kg wet						
Acenaphthylene	3.33	U	3.33	ug/kg wet						
Acenaphthene	3.33	U	3.33	ug/kg wet						
Fluorene	0.833	J	3.33	ug/kg wet						
Phenanthrene	3.33	U	3.33	ug/kg wet						
Anthracene	3.33	U	3.33	ug/kg wet						
Fluoranthene	3.33	U	3.33	ug/kg wet						
Indeno[1,2,3-cd]pyrene	3.33	U	3.33	ug/kg wet						
Pyrene	3.33	U	3.33	ug/kg wet						
Benz[a]anthracene	3.33	U	3.33	ug/kg wet						
Chrysene	3.33	U	3.33	ug/kg wet						
Benzo[b] fluoranthene	3.33	U	3.33	ug/kg wet						
Benzo[k] fluoranthene	3.33	U	3.33	ug/kg wet						
Benzo[a] pyrene	3.33	U	3.33	ug/kg wet						
Dibenz[a,h]anthracene	3.33	U	3.33	ug/kg wet						
Benzo[g,h,i] perylene	3.33	U	3.33	ug/kg wet						
Surrogate: Triphenylene	*151*			*ug/kg wet*	*166.67*		*91*	*68-129*		
LCS (L211261-BS1)				Prepared: 11/29/2012 Analyzed: 12/05/2012						
Naphthalene	127		3.33	ug/kg wet	166.67		76	0-127		
Acenaphthylene	134		3.33	ug/kg wet	166.67		80	50-140		
Acenaphthene	134		3.33	ug/kg wet	166.67		81	17-139		
Fluorene	132		3.33	ug/kg wet	166.67		79	28-145		
Phenanthrene	134		3.33	ug/kg wet	166.67		80	30-152		
Anthracene	137		3.33	ug/kg wet	166.67		82	19-171		
Fluoranthene	147		3.33	ug/kg wet	166.67		88	34-159		
Indeno[1,2,3-cd]pyrene	152		3.33	ug/kg wet	166.67		91	31-156		
Pyrene	146		3.33	ug/kg wet	166.67		87	33-152		
Benz[a]anthracene	161		3.33	ug/kg wet	166.67		97	32-157		
Chrysene	150		3.33	ug/kg wet	166.67		90	31-159		
Benzo[b] fluoranthene	161		3.33	ug/kg wet	166.67		96	33-164		
Benzo[k] fluoranthene	158		3.33	ug/kg wet	166.67		95	28-161		
Benzo[a] pyrene	165		3.33	ug/kg wet	166.67		99	29-149		
Dibenz[a,h]anthracene	160		3.33	ug/kg wet	166.67		96	27-153		
Benzo[g,h,i] perylene	163		3.33	ug/kg wet	166.67		98	32-157		
Surrogate: Triphenylene	*148*			*ug/kg wet*	*166.67*		*88*	*68-129*		

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 13:59

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211261 - SW 3540C									
Matrix Spike (L211261-MS2)		**Source: 1211101-01**	Prepared: 11/29/2012 Analyzed: 12/05/2012						
Naphthalene	132	3.59	ug/kg dry	179.92	4.52	71	0-127		
Acenaphthylene	156	3.59	ug/kg dry	179.92	3.61 U	87	50-140		
Acenaphthene	167	3.59	ug/kg dry	179.92	3.61 U	93	17-139		
Fluorene	158	3.59	ug/kg dry	179.92	1.08	87	28-145		
Phenanthrene	158	3.59	ug/kg dry	179.92	3.61 U	88	30-152		
Anthracene	157	3.59	ug/kg dry	179.92	3.61 U	88	19-171		
Fluoranthene	174	3.59	ug/kg dry	179.92	1.81	96	34-159		
Indeno[1,2,3-cd]pyrene	166	3.59	ug/kg dry	179.92	3.61 U	92	31-156		
Pyrene	159	3.59	ug/kg dry	179.92	1.57	88	33-152		
Benz[a]anthracene	174	3.59	ug/kg dry	179.92	1.41	96	32-157		
Chrysene	156	3.59	ug/kg dry	179.92	1.27	86	31-159		
Benzo[b] fluoranthene	177	3.59	ug/kg dry	179.92	3.61 U	98	33-164		
Benzo[k] fluoranthene	166	3.59	ug/kg dry	179.92	3.61 U	93	28-161		
Benzo[a] pyrene	170	3.59	ug/kg dry	179.92	0.994	94	29-149		
Dibenz[a,h]anthracene	166	3.59	ug/kg dry	179.92	3.61 U	92	27-153		
Benzo[g,h,i] perylene	171	3.59	ug/kg dry	179.92	1.07	95	32-157		
Surrogate: Triphenylene	*157*		*ug/kg dry*	*179.92*		*87*	*68-129*		
Matrix Spike Dup (L211261-MSD2)		**Source: 1211101-01**	Prepared: 11/29/2012 Analyzed: 12/05/2012						
Naphthalene	127	3.64	ug/kg dry	182.16	4.52	67	0-127	5	40
Acenaphthylene	153	3.64	ug/kg dry	182.16	3.61 U	84	50-140	3	40
Acenaphthene	158	3.64	ug/kg dry	182.16	3.61 U	87	17-139	7	40
Fluorene	152	3.64	ug/kg dry	182.16	1.08	83	28-145	5	40
Phenanthrene	154	3.64	ug/kg dry	182.16	3.61 U	84	30-152	4	40
Anthracene	154	3.64	ug/kg dry	182.16	3.61 U	84	19-171	4	40
Fluoranthene	173	3.64	ug/kg dry	182.16	1.81	94	34-159	2	40
Indeno[1,2,3-cd]pyrene	166	3.64	ug/kg dry	182.16	3.61 U	91	31-156	1	40
Pyrene	157	3.64	ug/kg dry	182.16	1.57	86	33-152	2	40
Benz[a]anthracene	172	3.64	ug/kg dry	182.16	1.41	94	32-157	2	40
Chrysene	157	3.64	ug/kg dry	182.16	1.27	85	31-159	0.9	40
Benzo[b] fluoranthene	178	3.64	ug/kg dry	182.16	3.61 U	98	33-164	0.9	40
Benzo[k] fluoranthene	166	3.64	ug/kg dry	182.16	3.61 U	91	28-161	2	40
Benzo[a] pyrene	171	3.64	ug/kg dry	182.16	0.994	93	29-149	1	40
Dibenz[a,h]anthracene	164	3.64	ug/kg dry	182.16	3.61 U	90	27-153	2	40
Benzo[g,h,i] perylene	167	3.64	ug/kg dry	182.16	1.07	91	32-157	4	40
Surrogate: Triphenylene	*155*		*ug/kg dry*	*182.16*		*85*	*68-129*		

PREPARATION BENCH SHEET

L211261

Lionville Laboratory

Printed: 12/5/2012 1:46:20PM

Matrix: Solid **Prepared using: HPLC - SW 3540C** **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211094-01	8310 PAH	11/29/2012 16:25	30.27	5				50	WC-Hanford, Inc.	
1211101-01	8310 PAH	11/29/2012 16:25	30.75	5				50	WC-Hanford, Inc.	
1211102-01	8310 PAH	11/29/2012 16:25	30.19	5				50	WC-Hanford, Inc.	
1211102-02	8310 PAH	11/29/2012 16:25	30.12	5				50	WC-Hanford, Inc.	
1211102-03	8310 PAH	11/29/2012 16:25	30.92	25				50	WC-Hanford, Inc.	
1211102-04	8310 PAH	11/29/2012 16:25	30.48	5				50	WC-Hanford, Inc.	
1211103-01	8310 PAH	11/29/2012 16:25	30.02	5				50	WC-Hanford, Inc.	
1211103-02	8310 PAH	11/29/2012 16:25	30.28	5				50	WC-Hanford, Inc.	
L211261-BLK1	QC	11/29/2012 16:25	30	5				50		
L211261-BS1	QC	11/29/2012 16:25	30	5	1200436		50	50		
L211261-MS1	QC	11/29/2012 16:25	30.18	5	1200436	1211094-01	50	50		
L211261-MS2	QC	11/29/2012 16:25	30.89	5	1200436	1211101-01	50	50		
L211261-MS3	QC	11/29/2012 16:25	30.26	25	1200436	1211102-03	50	50		
L211261-MS4	QC	11/29/2012 16:25	30.04	5	1200436	1211103-01	50	50		
L211261-MSD1	QC	11/29/2012 16:25	30.51	5	1200436	1211094-01	50	50		
L211261-MSD2	QC	11/29/2012 16:25	30.51	5	1200436	1211101-01	50	50		
L211261-MSD3	QC	11/29/2012 16:25	30.81	25	1200436	1211102-03	50	50		
L211261-MSD4	QC	11/29/2012 16:25	30.28	5	1200436	1211103-01	50	50		

12/5/12 0846 Revision

Extracts Relinquished By Date Extracts Received By Date

PREPARATION BENCH SHEET

L211261

Lionville Laboratory

Printed: 12/4/2012 6:31:42PM

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200612**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211094-01	8310 PAH	11/29/2012 16:25	30.27	5				50	WC-Hanford, Inc.	
1211101-01	8310 PAH	11/29/2012 16:25	30.75	5				50	WC-Hanford, Inc.	
1211102-01	8310 PAH	11/29/2012 16:25	30.19	5				50	WC-Hanford, Inc.	
1211102-02	8310 PAH	11/29/2012 16:25	30.12	5				50	WC-Hanford, Inc.	
1211102-03	8310 PAH	11/29/2012 16:25	30.92	5				50	WC-Hanford, Inc.	
1211102-04	8310 PAH	11/29/2012 16:25	30.48	5				50	WC-Hanford, Inc.	
1211103-01	8310 PAH	11/29/2012 16:25	30.02	5				50	WC-Hanford, Inc.	
1211103-02	8310 PAH	11/29/2012 16:25	30.28	5				50	WC-Hanford, Inc.	
L211261-BLK1	QC	11/29/2012 16:25	30	5				50		
L211261-BS1	QC	11/29/2012 16:25	30	5	1200436		50	50		
L211261-MS1	QC	11/29/2012 16:25	30.18	5	1200436	1211094-01	50	50		
L211261-MS2	QC	11/29/2012 16:25	30.89	5	1200436	1211101-01	50	50		
L211261-MS3	QC	11/29/2012 16:25	30.26	5	1200436	1211102-03	50	50		
L211261-MS4	QC	11/29/2012 16:25	30.04	5	1200436	1211103-01	50	50		
L211261-MSD1	QC	11/29/2012 16:25	30.51	5	1200436	1211094-01	50	50		
L211261-MSD2	QC	11/29/2012 16:25	30.51	5	1200436	1211101-01	50	50		
L211261-MSD3	QC	11/29/2012 16:25	30.81	5	1200436	1211102-03	50	50		
L211261-MSD4	QC	11/29/2012 16:25	30.28	5	1200436	1211103-01	50	50		

12/4/12 8:3 — Extracts Relinquished By / Date

S Zah 12/05/12 8:40 — Extracts Received By / Date

Lionville Laboratory Use Only: 121101

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
A Division of Eberline Analytical Corporation

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

KP0158

Client: WC Hanford SAFA RC-190
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: Std TAT: 7Day

Date Rec'd: 11-27-12 Date Due: 12-4-12

		A			B			C		D					
Refrigerator #		2			2			2		2	1				
#/Type Container	Liquid														
	Solid	1AG			1AG			1AG		1AG	1				
Volume	Liquid														
	Solid	60			60			60		120	1				
Preservatives		—			—			—		—	1				
ANALYSES REQUESTED		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb	PAHs		Metal Hg	CN	TCLP Met	TCLP Hg				
Lionville Laboratory Use Only			8270			8310		METALS		TCLP METALS	1				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected		BNA			PAHs			Metal Hg		TCLP Met	TCLP Hg				
W Water, WW Waste Water, GW Groundwater, WST Waste, WI Wipe, SO Solid, S Soil, SL Sludge, SE Sediment, PC Paint Chips, O Oil, NAL Non-Aqueous Liquid, L Leachate, A Air, T Tissue, F Fish	01	J1R5X8	✓	✓	SOIL	11-20-12	0957		X			X			X		X	X				

Special Instructions:
METALS = HSL + B, Mo, Si (NOTL)

Special Instructions:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	11/27/12	1000

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-190-118	Page 1 of 1

Collector Q. Stowe	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code ~~8L~~ 8J	**Data Turnaround** ~~21~~ 7 Days		
Project Designation 100N Field Remediation - Soil In-Process	**Sampling Location** 600-340		**SAF No.** RC-190
Ice Chest No. RCC-08-022	**Field Logbook No.** EL-1652-07	**COA** 0603402.000	**Method of Shipment** FedEx
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE	**Offsite Property No.** A120646		**Bill of Lading/Air Bill No.** See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	None	Cool 4C	Cool 4C							
Type of Container	G/P	G/P	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	120mL	60mL	60mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	PAHs - 8310							
Sample No. / Matrix * / Sample Date / Sample Time											
J1R5X8 / SOIL / 11-20-12 / 0957	X	X	X	X							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1010 11/20/12	Dennis Newman	1010 11/20/12
Dennis Newman	1400 11/20/12	[illegible]	1060#1 11-20-12 1400
[illegible]	1060#1 11-26-12 0840	Fed Ex	
Fed Ex	11-27-12 1000	VICTOR HERNANDEZ	11-27-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wl=Wipe
L=Liquid
V=Vegetation
X=Other

KP0158

REVIEWED BY AJ DATE 11-26-12

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

00000040

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/SAF/SOW/Release #: RC-190

Date: 11/27/12

LvL Batch #: 1211101

Sample Custodian: [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill #
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 2-5	°C	Cooler # RCC-08-022
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

METALS

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/04/2012 15:59

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X8	1211101-01	Soil	11/20/2012 09:57	11/27/2012 10:00

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-190
LVL#: 1211101
SDG/SAF#: KP0158/RC-190

W.O.#: 60049-001-001-0001-00
Date Received: 11-27-12

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 1 soil sample and 1 leachate sample.

2. The samples were prepared and analyzed in accordance with methods listed on the data report forms.

   The soil sample was analyzed and reported with 3-fold dilutions for ICP metals due to sample matrix.

   The TCLP leachate sample was analyzed and reported with 5-fold dilutions for ICP metals due to sample matrix.

   The TCLP leachate sample was prepared with a 5-fold dilution for Mercury due to limited sample volume.

3. All analyses were performed within the required holding times.

4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvL's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits. 2120019-CCB2 and 2120019-CCB4 results for Barium (TCLP) were above the MRL, however less than 5% of the RCRA limit.

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, samples greater than 20X MB value}. All TCLP preparation/method blanks

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

(MB) were within method criteria {less than the Limit of Quantitation, MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}.

8. All ICP Interference Check Standards were within control limits.

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer. All laboratory control samples (LCS) were within the 80-120% control limits.

10. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits.

11. For analytes where the MS is out of control, a post-digestion MS (PDS) is performed. A PDS was prepared at meaningful concentration levels for the following analytes: Aluminum, Antimony, and Iron. The Iron post digestion spike recovery is outside the 75-125% control limit possibly due to matrix effect.

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The TCLP sample result for Chromium was less than ten times the MDL.

13. The TCLP extract from sample J1R5X8 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

    The matrix spike (MS) concentration for Mercury was equivalent to the regulatory level (200 ppb) as per SW846 method 1311. The required spike concentration is above the linear range of the instrument, resulting in a 10-fold dilution (the matrix spike was prepared with a 5-fold dilution). The MS recovery for Mercury was greater than 50% as per method criteria.

14. For the purposes of this report, the data have been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

15. LvL is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

16. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

12/6/12

Iain Daniels
Laboratory Manager
Lionville Laboratory

Date

alm/11-101Lhhg%

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/04/2012 15:59

Notes and Definitions

U	Analyte included in the analysis, but not detected
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
B	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag)
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/04/2012 15:59

J1R5X8

1211101-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**11100**		13.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Antimony	1.56	U	1.56	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Arsenic	**2.95**		2.61	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Barium	**87.7**		1.30	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Beryllium	**0.388**	B	0.521	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Boron	5.21	U	5.21	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cadmium	0.521	U	0.521	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Calcium	**3550**		261	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Chromium	**14.2**		0.521	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cobalt	**7.28**		5.21	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Copper	**13.6**		2.61	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Iron	**24900**		52.1	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Lead	**7.39**		1.30	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Magnesium	**4320**		195	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Manganese	**422**		13.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Molybdenum	5.21	U	5.21	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Nickel	**10.9**		10.4	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Potassium	**2520**		1040	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Selenium	0.782	U	0.782	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silicon	**292**		5.21	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silver	0.521	U	0.521	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Sodium	**1670**		130	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Vanadium	**58.0**		6.51	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Zinc	**47.7**		26.1	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Mercury	0.0294	U	0.0294	mg/kg dry	1	L211252	11/29/2012	12/03/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/04/2012 15:59

J1R5X8

1211101-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	0.0750	U	0.0750	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Barium	**0.192**		0.00500	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Cadmium	0.0150	U	0.0150	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Chromium	**0.00681**	B	0.0250	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Lead	0.0500	U	0.0500	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Selenium	0.100	U	0.100	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Silver	0.0300	U	0.0300	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Mercury	0.00100	U	0.00100	mg/L	1	L211272	11/30/2012	12/03/2012	7470

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/04/2012 15:59

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211251 - SW 3050B										
Blank (L211251-BLK1)				Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	4.63	U	4.63	mg/kg wet						
Antimony	0.556	U	0.556	mg/kg wet						
Arsenic	0.926	U	0.926	mg/kg wet						
Barium	0.463	U	0.463	mg/kg wet						
Beryllium	0.185	U	0.185	mg/kg wet						
Boron	1.85	U	1.85	mg/kg wet						
Cadmium	0.185	U	0.185	mg/kg wet						
Calcium	5.74	B	92.6	mg/kg wet						
Chromium	0.185	U	0.185	mg/kg wet						
Cobalt	1.85	U	1.85	mg/kg wet						
Copper	0.926	U	0.926	mg/kg wet						
Iron	18.5	U	18.5	mg/kg wet						
Lead	0.463	U	0.463	mg/kg wet						
Magnesium	69.4	U	69.4	mg/kg wet						
Manganese	4.63	U	4.63	mg/kg wet						
Molybdenum	1.85	U	1.85	mg/kg wet						
Nickel	3.70	U	3.70	mg/kg wet						
Potassium	370	U	370	mg/kg wet						
Selenium	0.278	U	0.278	mg/kg wet						
Silicon	1.85	U	1.85	mg/kg wet						
Silver	0.185	U	0.185	mg/kg wet						
Sodium	46.3	U	46.3	mg/kg wet						
Vanadium	2.31	U	2.31	mg/kg wet						
Zinc	9.26	U	9.26	mg/kg wet						
Duplicate (L211251-DUP1)		**Source: 1211101-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	11200		14.6	mg/kg dry		11100			0.976	20
Antimony	1.76	U	1.76	mg/kg dry		1.56 U				20
Arsenic	2.88	B	2.93	mg/kg dry		2.95			2.30	20
Barium	91.4		1.46	mg/kg dry		87.7			4.06	20
Beryllium	0.416	B	0.585	mg/kg dry		0.388			6.91	20
Boron	5.85	U	5.85	mg/kg dry		5.21 U				20
Cadmium	0.585	U	0.585	mg/kg dry		0.521 U				20
Calcium	3550		293	mg/kg dry		3550			0.0116	20
Chromium	14.2		0.585	mg/kg dry		14.2			0.0574	20
Cobalt	7.47		5.85	mg/kg dry		7.28			2.49	20
Copper	14.0		2.93	mg/kg dry		13.6			2.32	20

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/04/2012 15:59

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211251 - SW 3050B										
Duplicate (L211251-DUP1)		**Source: 1211101-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Iron	24500		58.5	mg/kg dry		24900			1.37	20
Lead	7.74		1.46	mg/kg dry		7.39			4.68	20
Magnesium	4310		219	mg/kg dry		4320			0.173	20
Manganese	420		14.6	mg/kg dry		422			0.605	20
Molybdenum	5.85	U	5.85	mg/kg dry		5.21 U				20
Nickel	11.5	B	11.7	mg/kg dry		10.9			4.92	20
Potassium	2520		1170	mg/kg dry		2520			0.220	20
Selenium	0.878	U	0.878	mg/kg dry		0.782 U				20
Silicon	255		5.85	mg/kg dry		292			13.3	20
Silver	0.585	U	0.585	mg/kg dry		0.521 U				20
Sodium	1620		146	mg/kg dry		1670			2.95	20
Vanadium	58.1		7.31	mg/kg dry		58.0			0.135	20
Zinc	49.6		29.3	mg/kg dry		47.7			3.98	20
Matrix Spike (L211251-MS1)		**Source: 1211101-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	12600		14.1	mg/kg dry	188.40	11100	836*	75-125		
Antimony	13.5		1.70	mg/kg dry	47.099	1.56 U	28.6*	75-125		
Arsenic	166		2.83	mg/kg dry	188.40	2.95	86.7	75-125		
Barium	258		1.41	mg/kg dry	188.40	87.7	90.3	75-125		
Beryllium	4.55		0.565	mg/kg dry	4.7099	0.388	88.4	75-125		
Boron	81.9		5.65	mg/kg dry	94.198	5.21 U	86.9	75-125		
Cadmium	3.98		0.565	mg/kg dry	4.7099	0.521 U	84.6	75-125		
Calcium	6020		283	mg/kg dry	2355.0	3550	105	75-125		
Chromium	30.4		0.565	mg/kg dry	18.840	14.2	86.0	75-125		
Cobalt	48.3		5.65	mg/kg dry	47.099	7.28	87.1	75-125		
Copper	34.2		2.83	mg/kg dry	23.550	13.6	87.2	75-125		
Iron	24900		56.5	mg/kg dry	94.198	24900	48.9*	75-125		
Lead	47.4		1.41	mg/kg dry	47.099	7.39	84.9	75-125		
Magnesium	6270		212	mg/kg dry	2355.0	4320	82.5	75-125		
Manganese	458		14.1	mg/kg dry	47.099	422	76.6	75-125		
Molybdenum	82.5		5.65	mg/kg dry	94.198	5.21 U	87.6	75-125		
Nickel	51.9		11.3	mg/kg dry	47.099	10.9	87.1	75-125		
Potassium	4660		1130	mg/kg dry	2355.0	2520	90.6	75-125		
Selenium	163		0.848	mg/kg dry	188.40	0.782 U	86.6	75-125		
Silicon	400		5.65	mg/kg dry	94.198	292	115	75-125		
Silver	4.09		0.565	mg/kg dry	4.7099	0.521 U	86.8	75-125		
Sodium	3790		141	mg/kg dry	2355.0	1670	89.7	75-125		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/04/2012 15:59

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211251 - SW 3050B									
Matrix Spike (L211251-MS1)		**Source: 1211101-01**	Prepared: 11/29/2012 Analyzed: 12/03/2012						
Vanadium	101	7.06	mg/kg dry	47.099	58.0	92.1	75-125		
Zinc	92.0	28.3	mg/kg dry	47.099	47.7	94.1	75-125		
Post Spike (L211251-PS1)		**Source: 1211101-01**	Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	181000		ug/L	66000	127000	80.9	75-125		
Antimony	287		ug/L	300.00	1.10	95.3	75-125		
Iron	380000		ug/L	126000	286000	74.3*	75-125		
Reference (L211251-SRM1)			Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	9780	14.7	mg/kg wet	6670.0		147	0-200.89		
Antimony	46.6	1.76	mg/kg wet	53.000		87.9	0-235.8		
Arsenic	116	2.94	mg/kg wet	114.00		102	82.8-117.54		
Barium	309	1.47	mg/kg wet	307.00		101	79.8-120.2		
Beryllium	108	0.588	mg/kg wet	108.00		100	82.8-117.6		
Boron	81.4	5.88	mg/kg wet	85.100		95.6	67.5-132.8		
Cadmium	229	0.588	mg/kg wet	225.00		102	83.6-116.4		
Calcium	3330	294	mg/kg wet	3360.0		99.0	83.3-116.9		
Chromium	82.2	0.588	mg/kg wet	77.200		107	73.3-126.4		
Cobalt	166	5.88	mg/kg wet	166.00		100	80.7-118.7		
Copper	266	2.94	mg/kg wet	271.00		98.1	80.8-119.2		
Iron	8620	58.8	mg/kg wet	8420.0		102	78.6-121.1		
Lead	187	1.47	mg/kg wet	190.00		98.3	81.6-118.4		
Magnesium	8140	221	mg/kg wet	8570.0		95.0	83.2-116.7		
Manganese	1020	14.7	mg/kg wet	965.00		105	69.3-130.5		
Molybdenum	244	5.88	mg/kg wet	235.00		104	76.2-123.8		
Nickel	226	11.8	mg/kg wet	221.00		102	79.6-120.8		
Potassium	14900	1180	mg/kg wet	14400		103	81.9-118.1		
Selenium	193	0.882	mg/kg wet	187.00		103	75.9-124.6		
Silicon	803	5.88	mg/kg wet	807.00		99.5	0-219.3		
Silver	81.9	0.588	mg/kg wet	83.500		98.1	82.7-117.1		
Sodium	9560	147	mg/kg wet	9730.0		98.3	82.5-117.2		
Vanadium	110	7.35	mg/kg wet	98.700		111	75.9-123.6		
Zinc	220	29.4	mg/kg wet	199.00		110	78.4-121.6		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/04/2012 15:59

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211252 - SW 7471A Prep										
Blank (L211252-BLK1)				Prepared: 11/29/2012 Analyzed: 12/03/2012						
Mercury	0.0290	U	0.0290	mg/kg wet						
Duplicate (L211252-DUP1)		**Source: 1211101-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Mercury	0.0278	U	0.0278	mg/kg dry		0.0294 U				20
Matrix Spike (L211252-MS1)		**Source: 1211101-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Mercury	0.160		0.0257	mg/kg dry	0.14250	0.0294 U	112	75-125		20
Reference (L211252-SRM1)				Prepared: 11/29/2012 Analyzed: 12/03/2012						
Mercury	1.38		0.0290	mg/kg wet	1.2900		107	62.6-138		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0158 Project Manager: Joan Kessner	**Reported:** 12/04/2012 15:59

TCLP Metals by SW846 1311 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211264 - SW 3010A										
Blank (L211264-BLK1)				Prepared: 11/30/2012 Analyzed: 12/03/2012						
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.00100	U	0.00100	mg/L						
Cadmium	0.00300	U	0.00300	mg/L						
Chromium	0.00500	U	0.00500	mg/L						
Lead	0.0100	U	0.0100	mg/L						
Selenium	0.0200	U	0.0200	mg/L						
Silver	0.00600	U	0.00600	mg/L						
Blank (L211264-BLK3)				Prepared: 11/30/2012 Analyzed: 12/03/2012						
Arsenic	0.0750	U	0.0750	mg/L						
Barium	0.00500	U	0.00500	mg/L						
Cadmium	0.0150	U	0.0150	mg/L						
Chromium	0.0250	U	0.0250	mg/L						
Lead	0.0500	U	0.0500	mg/L						
Selenium	0.100	U	0.100	mg/L						
Silver	0.0300	U	0.0300	mg/L						
LCS (L211264-BS1)				Prepared: 11/30/2012 Analyzed: 12/03/2012						
Arsenic	9.75		0.0150	mg/L	10.000		97.5	80-120		
Barium	4.99		0.00100	mg/L	5.0000		99.7	80-120		
Cadmium	0.228		0.00300	mg/L	0.25000		91.4	80-120		
Chromium	0.503		0.00500	mg/L	0.50000		101	80-120		
Lead	2.41		0.0100	mg/L	2.5000		96.6	80-120		
Selenium	9.44		0.0200	mg/L	10.000		94.4	80-120		
Silver	0.493		0.00600	mg/L	0.50000		98.6	80-120		
Duplicate (L211264-DUP2)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/04/2012						
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.192		0.00500	mg/L		0.192			0.0783	20
Cadmium	0.0150	U	0.0150	mg/L		0.0150 U				20
Chromium	0.0105	B	0.0250	mg/L		0.00681			42.2*	20
Lead	0.0500	U	0.0500	mg/L		0.0500 U				20
Selenium	0.100	U	0.100	mg/L		0.100 U				20
Silver	0.0300	U	0.0300	mg/L		0.0300 U				20

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0158	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/04/2012 15:59

TCLP Metals by SW846 1311 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211264 - SW 3010A										
Matrix Spike (L211264-MS2)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/04/2012						
Arsenic	5.04		0.0750	mg/L	5.0000	0.0750 U	101	50-1000		
Barium	95.6		0.00500	mg/L	100.00	0.192	95.4	50-1000		
Cadmium	0.991		0.0150	mg/L	1.0000	0.0150 U	99.1	50-1000		
Chromium	5.08		0.0250	mg/L	5.0000	0.00681	101	50-1000		
Lead	4.76		0.0500	mg/L	5.0000	0.0500 U	95.2	50-1000		
Selenium	0.984		0.100	mg/L	1.0000	0.100 U	98.4	50-1000		
Silver	3.20		0.0300	mg/L	5.0000	0.0300 U	64.0	50-1000		
Batch L211272 - SW 7470A Prep										
Blank (L211272-BLK1)				Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.000200	U	0.000200	mg/L						
Blank (L211272-BLK3)				Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.000200	U	0.000200	mg/L						
LCS (L211272-BS1)				Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.00523		0.000200	mg/L	0.0050000		105	80-120		
Duplicate (L211272-DUP2)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.00100	U	0.00100	mg/L		0.00100 U				20
Matrix Spike (L211272-MS2)		**Source: 1211101-01**		Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.205		0.0100	mg/L	0.20000	0.00100 U	102	50-1000		

Lionville Laboratory Logbook #: 1154

SAMPLE DIGESTION RECORD

Digestion Batch #: L211251
Date/Time Initiated: 11/29/12 1705
Date/Time Completed: 11/30/12 1400
Analyst: MW
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.

Digested / Undigested (circle one)
Balance #: B14
Balance Cal Verification: Y NA
Temp: 97°
BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
121101-01		0.64	50		TO	fine	brown soil	rocks	
L211251-DUP1		0.57	50			↓	↓	↓	
MS1	0.5	0.59	50			↓	↓	↓	
121102-01		0.53	50			coarse	dark brown compost	bars/veg.	
L211251-DUP2		0.55	50			↓	↓	↓	
MS2	0.5	0.58	50			↓	↓	↓	
121102-02		0.64	50			coarse	dark gray soil, white	lumps rocks	
03		0.62	50			fine	dark brown soil	rocks, metal	
04		0.53	50			coarse	dark brown soil	rocks, veg.	
121103-01		0.57	50			coarse	brown soil w/ white	rocks, metal, unknown	flat solid
L211251-DUP3		0.55	50			↓	↓ ↓	↓	
MS3	0.5	0.65	50			↓	↓	↓	
121103-02		0.54	50			fine	brown soil	N/A	
121104-01		0.57	50			fine	dark brown soil	unknown debris, veg.	
L211251-DUP4		0.55	50			↓	↓	↓	
+1 MS4	0.5	0.54	50			↓	↓	↓	
121205-01		0.60	50			not fine	brown sandy	N/A	
L211251-DUP5		0.64	50			↓	↓	↓	
MS5	0.5	0.70	50			↓	↓	↓	
BLK1		0.54	50						
SRM1	⊛	0.51	50		↓				

MW 11/30/12

Spiking IDs / Expiration Date:
MS# : 1201377

LCS#: 1201014 ⊛

Reagent IDs:
HNO_3 0000003390
HCl 413029
H_2O_2 411A03
1:1 HNO_3 637-076-07
1:1 HCl

File ID#:

Data Review By/Date: QLM 12/4/12

+ IE QLM 12/4/12

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Signed\SPI\Metals Digestion log.doc

Page #: 97

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PREPARATION BENCH SHEET

L211251

Lionville Laboratory

Printed: 12/4/2012 11:57:48AM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211101-01	6010B HSL Metals	11/29/2012 17:05	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-01	6010B HSL Metals	11/29/2012 17:05	0.53	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-02	6010B HSL Metals	11/29/2012 17:05	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-03	6010B HSL Metals	11/29/2012 17:05	0.62	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-04	6010B HSL Metals	11/29/2012 17:05	0.53	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211103-01	6010B HSL Metals	11/29/2012 17:05	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211103-02	6010B HSL Metals	11/29/2012 17:05	0.54	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211104-01	6010B HSL Metals	11/29/2012 17:05	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211105-01	6010B HSL Metals	11/29/2012 17:05	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
L211251-BLK1	QC	11/29/2012 17:05	0.54	50						
L211251-DUP1	QC	11/29/2012 17:05	0.57	50		1211101-01				
L211251-DUP2	QC	11/29/2012 17:05	0.55	50		1211102-01				
L211251-DUP3	QC	11/29/2012 17:05	0.55	50		1211103-01				
L211251-DUP4	QC	11/29/2012 17:05	0.55	50		1211104-01				
L211251-DUP5	QC	11/29/2012 17:05	0.64	50		1211105-01				
L211251-MS1	QC	11/29/2012 17:05	0.59	50	1201377	1211101-01	500			
L211251-MS2	QC	11/29/2012 17:05	0.58	50	1201377	1211102-01	500			
L211251-MS3	QC	11/29/2012 17:05	0.65	50	1201377	1211103-01	500			
L211251-MS4	QC	11/29/2012 17:05	0.54	50	1201377	1211104-01	500			
L211251-MS5	QC	11/29/2012 17:05	0.7	50	1201377	1211105-01	500			

Revision addition of Post spike AJM 12/4/12

Extracts Relinquished By Date Extracts Received By Date

PREPARATION BENCH SHEET

L211251

Lionville Laboratory

Printed: 12/4/2012 11:57:48AM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L211251-PS1	QC	11/29/2012 17:05	0.64	50	1001493	1211101-01	100			
L211251-PS2	QC	11/29/2012 17:05	0.53	50	1001493	1211102-01	100			
L211251-PS3	QC	11/29/2012 17:05	0.57	50	1001493	1211103-01	100			
L211251-PS4	QC	11/29/2012 17:05	0.57	50	1001902	1211104-01	100			
L211251-PS5	QC	11/29/2012 17:05	0.6	50	1001902	1211105-01	100			
L211251-SRM1	QC	11/29/2012 17:05	0.51	50	1201014		510			

Revision addition of Post Spike AGM

Extracts Relinquished By Date

12/4/12

Extracts Received By Date

PREPARATION BENCH SHEET

L211251

Lionville Laboratory

Printed: 12/3/2012 12:27:41PM

00000058

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211101-01	6010B HSL Metals	11/29/2012 17:05	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-01	6010B HSL Metals	11/29/2012 17:05	0.53	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-02	6010B HSL Metals	11/29/2012 17:05	0.64	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-03	6010B HSL Metals	11/29/2012 17:05	0.62	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211102-04	6010B HSL Metals	11/29/2012 17:05	0.53	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211103-01	6010B HSL Metals	11/29/2012 17:05	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211103-02	6010B HSL Metals	11/29/2012 17:05	0.54	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211104-01	6010B HSL Metals	11/29/2012 17:05	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
1211105-01	6010B HSL Metals	11/29/2012 17:05	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (No TL)
L211251-BLK1	QC	11/29/2012 17:05	0.54	50						
L211251-DUP1	QC	11/29/2012 17:05	0.57	50		1211101-01				
L211251-DUP2	QC	11/29/2012 17:05	0.55	50		1211102-01				
L211251-DUP3	QC	11/29/2012 17:05	0.55	50		1211103-01				
L211251-DUP4	QC	11/29/2012 17:05	0.55	50		1211104-01				
L211251-DUP5	QC	11/29/2012 17:05	0.64	50		1211105-01				
L211251-MS1	QC	11/29/2012 17:05	0.59	50	1201377	1211101-01	500			
L211251-MS2	QC	11/29/2012 17:05	0.58	50	1201377	1211102-01	500			
L211251-MS3	QC	11/29/2012 17:05	0.65	50	1201377	1211103-01	500			
L211251-MS4	QC	11/29/2012 17:05	0.54	50	1201377	1211104-01	500			
L211251-MS5	QC	11/29/2012 17:05	0.7	50	1201377	1211105-01	500			

Extracts Relinquished By — Date: 12/3/12

Extracts Received By — Date: 12/03/12

PREPARATION BENCH SHEET

L211251

Lionville Laboratory

Printed: 12/3/2012 12:27:41PM

Matrix: Solid **Prepared using: METALS - SW 3050B** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L211251-PS1	QC	11/29/2012 17:05	0.5	50						
L211251-SRM1	QC	11/29/2012 17:05	0.51	50	1201014		510			

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Extracts Relinquished By 12/3/12 Date

Extracts Received By 12/03/12 Date

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1153

Analyst: [illegible]
Date 11/29/12 - 11/30/12
Start Time/Temp: 1845/95
End Time/Temp: 1920/97

Instrument ID: HG3.3
Balance # B14 /NA
Pipette Calibration (Daily) Y

Prep Batch: L211252
Worksheet: HG120303
SOP No. ME-HgCVAA
BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				10 ml	50	
0.2 µg/l		0.100		10 ml	50	
1.0 µg/l		0.500		10 ml	50	
2.0 µg/l		1.000		10 ml	50	
5.0 µg/l		2.500		10 ml	50	
10.0 µg/l		5.000		10 ml	50	
ICV		0.125	2.5	10 ml	50	
CCV		0.250	5.0	10 ml	50	
ICB/CCB				10 ml	50	
L211252-BLK1				0.31	50	
SRM1				0.31	50	
1211101-01				0.34	50	
L211252-DUP1				0.36	50	
MS1		0.500	1.0	0.39	50	
1211102-01				0.34	50	
L211252-DUP2				0.34	50	
MS2		0.500	1.0	0.36	50	
1211102-02				0.36	50	
03				0.39	50	
04				0.37	50	
1211103-01				0.39	50	
L211252-DUP3				0.35	50	
MS3		0.500	1.0	0.35	50	
1211103-02				0.33	50	
1211104-01				0.39	50	
L211252-DUP4				0.35	50	
MS4		0.500	1.0	0.35	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI, 1201235	11/30/12 1145
ICV/CCV/LCS	(I.V. 1201411)	N/A

Reviewed By/Date: CGM 12/4/12

se book # 1153 for std traceability information

Soil LCS True Value = 1.25 mg/Kg
Standard # 1201014

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Soil LCS Spiking Concentration: 1.0 µg/ml

ME-HgCVAA-Prep0910

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Lionville Laboratory

MERCURY PREPARATION

Logbook # 1153

Analyst: [illegible]
Date 11/29/12 – 11/30/12
Start Time/Temp: See pg 082
End Time/Temp: See pg 082

Instrument ID: HG3.3
Balance # B14 ~~B29~~ W.E. /NA 11/30/12
Pipette Calibration (Daily) (Y)

Prep Batch: L211252
Worksheet: HG120303
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
1211105-01 W.E. 11/30/12				0.37	50	
L211252-DUP1				0.37	50	
MS5		0.5000	1.0	0.39	50	

[illegible] 11/30/12

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS		

Reviewed By/Date: [illegible] 12/4/12

se book # 1153 for std traceability information

Soil LCS True Value = See pg 082 mg/Kg
Standard # _____

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Soil LCS Spiking Concentration: 1.0 µg/ml

ME-HgCVAA-Prep0910

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Lionville Laboratory — Logbook #: 1154

SAMPLE DIGESTION RECORD

Digestion Batch #: L211264
Date/Time Initiated: 11/30/12 1030
Date/Time Completed: 11/30/12 1725
Analyst: MW
Matrix (circle): Soil Water Other TCLP
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

Digested / Undigested (circle one)
Balance #:
Balance Cal Verification: Y NA
Temp: 96
BLOCK 1 2 (circle one)
3

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
1211037-01	1.0 mL 11/30/12	50.0 mL	50	<	TC		colorless/clear	~~limited volume~~	~~very low~~
L211264-DUP1		50.0	50	<					
MS1	0.5	50.0	50						
1211037-02		50	50	<			colorless/clear		
03		50	50	<			colorless/clear		
1211101-01		50	50	<			colorless/clear		
L211264-DUP2		50	50	<					
MS2	0.5	50	50						
1211102-01		50	50	<			amber/clear		
02		50	50	<			colorless/clear		
L211264-DUP3		50	50	<					
MS3	0.5	50	50						
1211102-03		50	50	<			slightly yellow/clear		
04		50	50	<			colorless/clear		
1211103-01		50	50	<			slightly yellow/clear		
L211264-DUP4		50	50	<					
MS4	0.5	50	50						
1211103-02		50	50	<			slightly yellow/clear		
1211104-01		50	50	<			slightly yellow/clear		
L211264-DUP5		50	50	<					
MS5	0.5	50	50						
1211105-01		50	50	<			colorless/clear		
L211264-DUP6		50	50	<					
MS6	0.5	50	50						
BLK1		50	50				colorless/clear		
BS1	0.5	50	50						
BLK2		50	50	<					

Spiking IDs / Expiration Date:
MS#: 1201195
1200388
LCS#: 1201373

Reagent IDs:
HNO_3 0000003390
HCl
H_2O_2
1:1 HNO_3
1:1 HCl 637-069-01

File ID#:

Data Review By/Date: 12/4/12

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See next page

Page #:

Lionville Laboratory **Logbook #:** 1154

SAMPLE DIGESTION RECORD

Digestion Batch #: L211264
Date/Time Initiated: 11/30/12 1030
Date/Time Completed:
Analyst: MW
Matrix (circle): Soil Water (Other) TCLP
Method (circle one): 3005A (3010A) 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.

(Digested) / Undigested (circle one)
Balance #:
Balance Cal Verification: Y (NA)
Temp:
BLOCK 1 (3) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
L211264-BLK3		50	50	<	TC		clear/colorless		

MW 11/30/12

Spiking IDs / Expiration Date:
MS# : 094
LCS#: 094

Reagent IDs:
HNO_3
HCl
H_2O_2
1:1 HNO_3 094
1:1 HCl 094

File ID#:

Data Review By/Date: CLM 12/4/12

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Page #:

PREPARATION BENCH SHEET

L211264

Lionville Laboratory

Printed: 12/3/2012 12:33:04PM

Matrix: Solid **Prepared using: METALS - SW 3010A** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211037-01	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					Alliance Environmental Systems	
1211037-02	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					Alliance Environmental Systems	
1211037-03	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					Alliance Environmental Systems	
1211101-01	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211102-01	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211102-02	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211102-03	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211102-04	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211103-01	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211103-02	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211104-01	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
1211105-01	1311/6010B TCLP RCRA ICP MET	11/30/2012 10:30	50	50					WC-Hanford, Inc.	
L211264-BLK1	QC	11/30/2012 10:30	50	50						
L211264-BLK2	QC	11/30/2012 10:30	50	50						1211037
L211264-BLK3	QC	11/30/2012 10:30	50	50						1211101-1211105
L211264-BS1	QC	11/30/2012 10:30	50	50	1201373		500			
L211264-DUP1	QC	11/30/2012 10:30	50	50		1211037-01				
L211264-DUP2	QC	11/30/2012 10:30	50	50		1211101-01				
L211264-DUP3	QC	11/30/2012 10:30	50	50		1211102-02				
L211264-DUP4	QC	11/30/2012 10:30	50	50		1211103-01				

Extracts Relinquished By — Date: 12/5/12

Extracts Received By — Date: 12/03/12

PREPARATION BENCH SHEET

L211264

Lionville Laboratory

Printed: 12/3/2012 12:33:04PM

Matrix: Solid **Prepared using: METALS - SW 3010A** **(No Surrogate)**

Lab Number	Analysis	Prepared	Initial (mL)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L211264-DUP5	QC	11/30/2012 10:30	50	50		1211104-01				
L211264-DUP6	QC	11/30/2012 10:30	50	50		1211105-01				
L211264-MS1	QC	11/30/2012 10:30	50	50	1201195	1211037-01	500			
L211264-MS2	QC	11/30/2012 10:30	50	50	1201195	1211101-01	500			
L211264-MS3	QC	11/30/2012 10:30	50	50	1201195	1211102-02	500			
L211264-MS4	QC	11/30/2012 10:30	50	50	1201195	1211103-01	500			
L211264-MS5	QC	11/30/2012 10:30	50	50	1201195	1211104-01	500			
L211264-MS6	QC	11/30/2012 10:30	50	50	1201195	1211105-01	500			

Extracts Relinquished By — Date: 12/3/12

Extracts Received By — Date: 12/03/12

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1153

Analyst: [illegible]
Date 11/30/12
Start Time/Temp: 2200/94°
End Time/Temp: 2200/96°

Instrument ID: HG3.1
Balance # NA
Pipette Calibration (Daily) (Y)

Prep Batch: L211272
Worksheet: HG120301
SOP No. ME-HgCVAA
BLOCK 1 (2) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH <2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol. (g or (mL))	Final Sample Vol (mL)	Comments, % Solids, etc.
blank				35	35	
0.2 µg/l		0.070		35	35	
1.0 µg/l		0.350		35	35	
2.0 µg/l		0.700		35	35	
5.0 µg/l		1.750		35	35	
10.0 µg/l		3.500		35	35	
ICV		0.0875	2.5	35	35	
CCV		0.175	5.0	35	35	
ICB/CCB				35	35	
L211272-BLK1				35	35	
BS1		0.175	5.0	35	35	
BLK2	<			35	35	L211165
BLK3	<			35	35	L211223
1211037-01	<			35	35	
L211272-DUP1	<			35	35	
MS1		0.700	200 *	35	35	
1211037-02	<			35	35	
03	<			35	35	
1211101-01	<			7	35	limited volume
L211272-DUP2	<			7	35	limited volume
MS2		0.140	40(200)*	7	35	limited volume
1211102-01	<			35	35	
02	<			35	35	
L211272-DUP3	<			35	35	
MS3		0.700	200 *	35	35	
1211102-03	<			35	35	
04	<			35	35	

Standard:	ID	Prep Date/Time
ICAL/MS	BI 1201235	11/30/12 1145
ICV/CCV/LCS	(I.V. 1201411	N/A

Reviewed By/Date: [illegible] 12/4/12

se book # 1153 for std traceability information

Soil LCS True Value = N/A mg/Kg
Standard #

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
after LCS Spiking Concentration: 1.0 µg/ml

* diluted 1201234 (10x/ml)

ME-HgCVAA-Prep0910

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Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 11/30/12
Start Time/Temp: see pg 085
End Time/Temp: see pg

Instrument ID: HG3.1
Balance # NA
Pipette Calibration (Daily) Y

Logbook # 1153
Prep Batch: L211272
Worksheet: HG120301
SOP No. ME-HgCVAA
BLOCK 1 2 (circle one) 3

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol. (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
1211103-01	<			35	35	
L211272-DUP4	<			35	35	
MS4		0.700	200*	35	35	
1211103-02	<			35	35	
1211104-01	<			35	35	
L211272-DUP5	<			35	35	
MS5		0.700	200*	35	35	
1211105-01	<			35	35	
L211272-DUP6	<			35	35	
MS6		0.700	200*	35	35	

11/30/12 [illegible]

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	see pg 085	

Reviewed By/Date: [illegible] 12/4/12

se book # 1153 for std traceability information

Soil LCS True Value = see pg mg/Kg
Standard # see pg

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Soil LCS Spiking Concentration: 1.0 µg/ml

* used 1201234 (1 Aug/ml)

ME-HgCVAA-Prep0910

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Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 1168

Start Date: 11-28-12 Start Time: 12:51 Analyst: RH SOP: SPI-1311.1	End Date: 11-29-12 End Time: 7:00 Analyst: RH Method: B11.1	Tumbler Speed: 31 RPM Leachate Batch #: L211233 Leachate Page: 1 of 3 Room Temp. (°C): Start 22 /Finish 21 **Room Temp. Acceptance Criteria:** **23°C ± 2°**

LvL #: 1211101-01 Client ID#: J1R5X8 pH After 5 Min: 9.15 pH After Acid/Heat: 2.05 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.91	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: 1211102-01 Client ID#: J1R5X4 pH After 5 Min: 7.05 pH After Acid/Heat: 1.92 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.93	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL # 1211102-02 Client ID#: J1R5X5 pH After 5 Min: 8.61 pH After Acid/Heat: 2.06 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 7.49	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: 1211102-03 Client ID#: J1R5X6 pH After 5 Min: 8.09 pH After Acid/Heat: 1.91 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 5.56	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	1201456	11-14-12	5-14-13	4.93 ± 0.05
Fluid # 2	—			2.88 ± 0.05

SPI-1311.1-A-0310 Reviewed By/Date [signature] 12/4/12 Page #

Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 1168

Start Date: 11-28-12 Start Time: 12:51 Analyst: RH SOP: SPI-1311.1	End Date: 11-29-12 End Time: 7:00 Analyst: RH Method: 1311	Tumbler Speed: 31 RPM Leachate Batch #: L211223 Leachate Page: 2 of 3 Room Temp. (°C): Start 21 /Finish 21 **Room Temp. Acceptance Criteria:** **23°C ± 2°**

LvL #: 1211102-04 Client ID#: J1R5X7 pH After 5 Min: 8.56 pH After Acid/Heat: 1.86 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 5.11	Initial Filtration Data and Comments: Solids: ____% / NA Initial Filtrate Added:
LvL #: 1211103-01 Client ID#: J1R5X9 pH After 5 Min: 8.43 pH After Acid/Heat: 1.89 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 5.71	Initial Filtration Data and Comments: Solids: ____% / NA Initial Filtrate Added:
LvL # 1211103-02 Client ID#: J1R600 pH After 5 Min: 8.64 pH After Acid/Heat: 2.15 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.83	Initial Filtration Data and Comments: Solids: ____% / NA Initial Filtrate Added:
LvL #: 1211104-01 Client ID#: J1R5X3 pH After 5 Min: 8.12 pH After Acid/Heat: 2.91 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 5.76	Initial Filtration Data and Comments: Solids: ____% / NA Initial Filtrate Added:

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	1201456	11-14-12	5-14-13	4.93 ± 0.05
Fluid # 2				2.88 ± 0.05

SPI-1311.1-A-0310

Reviewed By/Date [illegible] 12/4/12

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Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 1168

Start Date: 11-28-12 Start Time: 12:51 Analyst: RH SOP: SPI-1311.1	End Date: 11-29-12 End Time: 7:40 Analyst: RH Method: 1311.1	Tumbler Speed: 31 RPM Leachate Batch #: L211228 Leachate Page: 3 of 3 Room Temp. (°C): Start 21 /Finish 21 **Room Temp. Acceptance Criteria:** **23°C ± 2°**

LvL #: 1211105-01 Client ID#: J1R5X2 pH After 5 Min: 7.63 pH After Acid/Heat: 2.31 Extraction Fluid/pH: #1 4.94 Sample Wt.(g): 25 Extract Fluid Vol.(mL): 500 pH After Extraction: 4.87	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: L211223 Client ID#: N/A pH After 5 Min: N/A pH After Acid/Heat: N/A Extraction Fluid/pH: N/A Sample Wt.(g): N/A Extract Fluid Vol.(mL): N/A pH After Extraction: N/A	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: BLANK
LvL #: _____ Client ID#: _____ pH After 5 Min: _____ pH After Acid/Heat: _____ Extraction Fluid/pH: _____ Sample Wt.(g): _____ Extract Fluid Vol.(mL): _____ pH After Extraction: _____	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
LvL #: _____ Client ID#: _____ pH After 5 Min: _____ pH After Acid/Heat: _____ Extraction Fluid/pH: _____ Sample Wt.(g): _____ Extract Fluid Vol.(mL): _____ pH After Extraction: _____	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____

11-29-12 RH

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	1201456	11-14-12	5-14-13	4.93 ± 0.05
Fluid # 2	—			2.88 ± 0.05

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