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

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 12/19/12
INITIAL/DATE

COMMENTS:

SDG KP0156 SAF-RC-190

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 100-N-93 In-Process

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

16 December 2012

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 #	1211102
SDG #	KP0156
SAF #	RC-190
Date Received	11/27/12
# Samples	4
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	X
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 101 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only

12/1/02

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
A Division of Eberline Analytical Corporation

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

KP0156

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

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

		A	B	C	D	E
Refrigerator #		2	2	2	2	2
#/Type Container	Liquid					
	Solid	1AG	1AG	1AG	1AG	1AG
Volume	Liquid					
	Solid	60	60	60	60	120
Preservatives		–	–	–	–	–
ANALYSES REQUESTED		ORGANIC: VOA	BNA	~~Pest~~ PCB	Herb	PAHs
		INORG: Metal	CN	TCLP Met	TCLP Hg	

Lionville Laboratory Use Only

MATRIX CODES:
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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8270	8082	8310	METALS	TCLP METALS
01	J1R5X4			SOIL	11-20-12	0824	X	X	X	X	X
02	J1R5X5					0829	X	X	X	X	X
03	J1R5X6					0833	X	X	X	X	X
04	J1R5X7					0837	X	X	X	X	X

Special Instructions:
METALS = HSL + B, Mo, Si (NO TL)

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	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-190-117	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** 100-N-93 - In Process		**SAF No.** RC-190
Ice Chest No. RCC-08-022	**Field Logbook No.** EL-1652-07	**COA** 000N932000	**Method of Shipment** FedEx
Shipped To ~~EDERLINE 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	Cool 4C						
Type of Container	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	60mL	60mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	PCBs - 8082	PAHs - 8310						
Sample No. / Matrix * / Sample Date / Sample Time											
J1R5X4 / SOIL / 11-20-12 / 0824	X	X	X	X	X						
J1R5X5 / SOIL / 11-20-12 / 0829	X	X	X	X	X						
J1R5X6 / SOIL / 11-20-12 / 0833	X	X	X	X	X						
J1R5X7 / SOIL / 11-20-12 / 0837	X	X	X	X	X						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	0845 11/20/12	Dennis Newman	0845 11/20/12
Dennis Newman	11/20/12 1400	Cindy Bingham	1060#1 11-20-12 1400
Cindy Bingham	1060#1 WCH 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
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

KP0156

REVIEWED BY AF DATE 11-26-12

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

WCH-EE-011

000000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

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

Date: 11/27/12

LvL Batch #: 1211102

Sample Custodian: [illegible]

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 _____

SR-002-B-0412.doc

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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X4	1211102-01	Soil	11/20/2012 08:24	11/27/2012 10:00
J1R5X5	1211102-02	Soil	11/20/2012 08:29	11/27/2012 10:00
J1R5X6	1211102-03	Soil	11/20/2012 08:33	11/27/2012 10:00
J1R5X7	1211102-04	Soil	11/20/2012 08:37	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 KP0156
LVL #: 1211102

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

SEMIVOLATILE

Four (4) soil samples were collected on 11-20-2012.

The samples 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 TCL Semivolatile 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 samples that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.

2. Samples were extracted and analyzed within holding time.

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

4. Due to the nature of the matrix, samples J1R5X4, J1R5X5, J1R5X6 had elevated final volumes of 4 mls and samples J1R5X7, L211273-MS2, and L211273-MSD2 had elevated final volumes of 2 mls. Reporting limits have been adjusted to reflect these changes.

5. Samples J1R5X4, J1R5X5, J1R5X6, J1R5X7, L211273-MS2, and L211273-MSD2 required instrument dilutions. Reporting limits have been adjusted to reflect the necessary dilutions.

6. Four (4) of forty-eight obtainable surrogate recoveries were outside acceptance criteria. The surrogate recovery criteria were not met for the following samples: J1R5X5, J1R5X7, L211273-MS2, and L211273-MSD2. A copy of the Sample Discrepancy Report (SDR# 12MS210) has been enclosed.

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

8. Three (3) of sixty-four blank spike recoveries were within acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS210) has been enclosed.

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9. Eight (8) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS210) has been enclosed.

10. The samples were 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.

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

12/13/12
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: 121200 2

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:	KP0156
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:	KP0156
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:	KP0156
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
J1R5X7	1211102-04	N120506.D	12/05/12 13:56
J1R5X7	L211273-MS2	N120507.D	12/05/12 14:42
J1R5X7	L211273-MSD2	N120508.D	12/05/12 15:27
J1R5X5	1211102-02	N120509.D	12/05/12 16:12
J1R5X6	1211102-03	N120510.D	12/05/12 16:57
J1R5X4	1211102-01	N120515.D	12/05/12 20:43

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS210

Initiator: Sharon Saylor
Date: 12-6-12
Client: WCHanford

Batch: 1211102
Samples: L211273-BS1, MS2, MSD2
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) <10% recovery of 2,4,6-tribromophenol in JIR5X7, JIR5X5, L211273-MSD2, L211273-MS2
(2) several outside QC acceptance criteria Phenols
Spike recoveries outside QC acceptance limits in L211273-BS1, L211273-MS2, L211273-MSD2 (2,4-dimethylphenol, 4-n.nitrophenol, pentachlorophenol, 2,4,6-trichlorophenol, 2,4,5-Trichlorophenol, 2,4-dinitrophenol 4,6-dinitro-2-methylphenol)

2. Known or Probable Causes(s) (1) possible matrix effect, samples required dilutions for analysis, in addition had elevated final volumes (2) Acidic phenols subject to erratic chromatographic behavior. MS/MSD possible matrix effect, samples required dilutions for analysis, in addition had elevated final volumes

BK 12/6/12

3. Discussion and Proposed Action Other Description:

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

narrate

4. Project Manager Instructions...signature/date: 12/13/12

__ 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: 12/13/12 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.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X4
1211102-01 (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	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
1,2-Dichlorobenzene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
1,3-Dichlorobenzene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
1,4-Dichlorobenzene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,4,5-Trichlorophenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,4,6-Trichlorophenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,4-Dichlorophenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,4-Dimethylphenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrophenol	129000	U	129000	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrotoluene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2,6-Dinitrotoluene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2-Chloronaphthalene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2-Chlorophenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2-Methylnaphthalene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2-Methylphenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2-Nitroaniline	129000	U	129000	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
2-Nitrophenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
3,3'-Dichlorobenzidine	51700	U	51700	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
3-Nitroaniline	129000	U	129000	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4,6-Dinitro-2-methylphenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4-Bromophenyl Phenyl Ether	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4-Chloro-3-methylphenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4-Chloroaniline	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4-Chlorophenyl Phenyl Ether	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
3- and/or 4-Methylphenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4-Nitroaniline	129000	U	129000	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
4-Nitrophenol	129000	U	129000	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Acenaphthene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Acenaphthylene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Anthracene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Benz[a]anthracene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Benzo[a] pyrene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Benzo[b] fluoranthene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Benzo[g,h,i] perylene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Benzo[k] fluoranthene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroethoxy) methane	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X4
1211102-01 (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	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroisopropyl) ether	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Bis(2-ethylhexyl) phthalate	**67000**	D	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Butyl Benzyl Phthalate	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Carbazole	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Chrysene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Dibenz[a,h]anthracene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Dibenzofuran	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Diethyl Phthalate	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Dimethyl Phthalate	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Di-n-butyl Phthalate	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Di-n-octyl Phthalate	**19600**	D, J	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Fluoranthene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Fluorene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobenzene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobutadiene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Hexachlorocyclopentadiene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Hexachloroethane	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Indeno[1,2,3-cd]pyrene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Isophorone	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Naphthalene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Nitrobenzene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodi-n-propylamine	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodiphenylamine	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Pentachlorophenol	129000	U	129000	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Phenanthrene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Phenol	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Pyrene	25900	U	25900	ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
TIC:Ethane, 1,1,2,2-tetrachloro-	**9760**	N, J, D		ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
TIC:Unknown 2	**12400**	J, D		ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
TIC:Phthalate 1	**9270**	J, D		ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
TIC:Unknown 1	**11000**	J, D		ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 1	**192000**	A, B, D, J		ug/kg dry	10	L211273	11/30/2012	12/05/2012	8270C
Surrogate: 2-Fluorophenol	*54 %*		*25-121*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Phenol-d5	*53 %*		*24-113*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*64 %*		*23-120*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X4

1211102-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*63 %*	*30-115*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*23 %*	*19-122*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*57 %*	*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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X5
1211102-02 (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	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,2-Dichlorobenzene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,3-Dichlorobenzene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,4-Dichlorobenzene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,5-Trichlorophenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,6-Trichlorophenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dichlorophenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dimethylphenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrophenol	22600	U	22600	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrotoluene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,6-Dinitrotoluene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chloronaphthalene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chlorophenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylnaphthalene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylphenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitroaniline	22600	U	22600	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitrophenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3,3'-Dichlorobenzidine	9040	U	9040	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3-Nitroaniline	22600	U	22600	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4,6-Dinitro-2-methylphenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Bromophenyl Phenyl Ether	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloro-3-methylphenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloroaniline	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chlorophenyl Phenyl Ether	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3- and/or 4-Methylphenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitroaniline	22600	U	22600	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitrophenol	22600	U	22600	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthylene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Anthracene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benz[a]anthracene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[a] pyrene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[b] fluoranthene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[g,h,i] perylene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[k] fluoranthene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroethoxy) methane	4520	U	4520	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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X5
1211102-02 (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	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroisopropyl) ether	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-ethylhexyl) phthalate	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Butyl Benzyl Phthalate	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Carbazole	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Chrysene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenz[a,h]anthracene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenzofuran	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Diethyl Phthalate	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dimethyl Phthalate	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-butyl Phthalate	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-octyl Phthalate	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluoranthene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluorene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobenzene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobutadiene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorocyclopentadiene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachloroethane	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Indeno[1,2,3-cd]pyrene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Isophorone	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Naphthalene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Nitrobenzene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodi-n-propylamine	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodiphenylamine	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pentachlorophenol	22600	U	22600	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenanthrene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenol	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pyrene	4520	U	4520	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Ethane, 1,1,2,2-tetrachloro-	**1870**	N, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 2	**124000**	A, B, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 1	**2100**	A, B, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Surrogate: 2-Fluorophenol	*52 %*		*25-121*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Phenol-d5	*49 %*		*24-113*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*51 %*		*23-120*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*66 %*		*30-115*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*1 % **		*19-122*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X5

1211102-02 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: p-Terphenyl-d14	*59 %*	*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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X6
1211102-03 (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	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,2-Dichlorobenzene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,3-Dichlorobenzene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,4-Dichlorobenzene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,5-Trichlorophenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,6-Trichlorophenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dichlorophenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dimethylphenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrophenol	22400	U	22400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrotoluene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,6-Dinitrotoluene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chloronaphthalene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chlorophenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylnaphthalene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylphenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitroaniline	22400	U	22400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitrophenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3,3'-Dichlorobenzidine	8950	U	8950	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3-Nitroaniline	22400	U	22400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4,6-Dinitro-2-methylphenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Bromophenyl Phenyl Ether	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloro-3-methylphenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloroaniline	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chlorophenyl Phenyl Ether	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3- and/or 4-Methylphenol	**2390**	J, D	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitroaniline	22400	U	22400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitrophenol	22400	U	22400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthylene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Anthracene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benz[a]anthracene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[a] pyrene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[b] fluoranthene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[g,h,i] perylene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[k] fluoranthene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroethoxy) methane	4470	U	4470	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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X6
1211102-03 (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	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroisopropyl) ether	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-ethylhexyl) phthalate	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Butyl Benzyl Phthalate	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Carbazole	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Chrysene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenz[a,h]anthracene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenzofuran	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Diethyl Phthalate	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dimethyl Phthalate	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-butyl Phthalate	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-octyl Phthalate	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluoranthene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluorene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobenzene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobutadiene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorocyclopentadiene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachloroethane	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Indeno[1,2,3-cd]pyrene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Isophorone	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Naphthalene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Nitrobenzene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodi-n-propylamine	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodiphenylamine	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pentachlorophenol	22400	U	22400	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenanthrene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenol	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pyrene	4470	U	4470	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Unknown 3	**1760**	D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Unknown 1	**3200**	J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Toluene	**38000**	N, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Unknown 2	**3500**	D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 1	**118000**	A, B, J, D		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Surrogate: 2-Fluorophenol	*67 %*		*25-121*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Phenol-d5	*76 %*		*24-113*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*70 %*		*23-120*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X6
1211102-03 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*75 %*	*30-115*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*40 %*	*19-122*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*64 %*	*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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X7
1211102-04 (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	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,2-Dichlorobenzene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,3-Dichlorobenzene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
1,4-Dichlorobenzene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,5-Trichlorophenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4,6-Trichlorophenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dichlorophenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dimethylphenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrophenol	11700	U	11700	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,4-Dinitrotoluene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2,6-Dinitrotoluene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chloronaphthalene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Chlorophenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylnaphthalene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Methylphenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitroaniline	11700	U	11700	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
2-Nitrophenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3,3'-Dichlorobenzidine	4690	U	4690	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3-Nitroaniline	11700	U	11700	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4,6-Dinitro-2-methylphenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Bromophenyl Phenyl Ether	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloro-3-methylphenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chloroaniline	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Chlorophenyl Phenyl Ether	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
3- and/or 4-Methylphenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitroaniline	11700	U	11700	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
4-Nitrophenol	11700	U	11700	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Acenaphthylene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Anthracene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benz[a]anthracene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[a] pyrene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[b] fluoranthene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[g,h,i] perylene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Benzo[k] fluoranthene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroethoxy) methane	2350	U	2350	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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X7
1211102-04 (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	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-chloroisopropyl) ether	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Bis(2-ethylhexyl) phthalate	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Butyl Benzyl Phthalate	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Carbazole	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Chrysene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenz[a,h]anthracene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dibenzofuran	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Diethyl Phthalate	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Dimethyl Phthalate	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-butyl Phthalate	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Di-n-octyl Phthalate	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluoranthene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Fluorene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobenzene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorobutadiene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachlorocyclopentadiene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Hexachloroethane	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Indeno[1,2,3-cd]pyrene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Isophorone	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Naphthalene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Nitrobenzene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodi-n-propylamine	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
N-Nitrosodiphenylamine	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pentachlorophenol	11700	U	11700	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenanthrene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Phenol	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Pyrene	2350	U	2350	ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Ethane, 1,1,2,2-tetrachloro-	**1300**	N, D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 3	**106000**	A, B, D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 2	**2060**	A, B, D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
TIC:Aldol Condensate 1	**600**	A, D, J		ug/kg dry	3	L211273	11/30/2012	12/05/2012	8270C
Surrogate: 2-Fluorophenol	*37 %*		*25-121*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Phenol-d5	*41 %*		*24-113*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*59 %*		*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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

J1R5X7

1211102-04 (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	*% **	*U*	*19-122*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*66 %*		*18-137*			*L211273*	*11/30/2012*	*12/05/2012*	*8270C*

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

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.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

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 Rev 12/6/12	673	A, J		ug/kg wet						
Aldol Condensate 1	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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0156 Project Manager: Joan Kessner	**Reported:** 12/06/2012 12:45

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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0156 Project Manager: Joan Kessner	**Reported:** 12/06/2012 12:45

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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

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-MS2)		**Source: 1211102-04**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
1,2,4-Trichlorobenzene	1700	D		ug/kg dry	2335.4	2350 U	73	45-110		
1,2-Dichlorobenzene	1690	D		ug/kg dry	2335.4	2350 U	72	45-105		
1,3-Dichlorobenzene	1580	D		ug/kg dry	2335.4	2350 U	68	40-100		
1,4-Dichlorobenzene	1680	D		ug/kg dry	2335.4	2350 U	72	35-105		
2,4,5-Trichlorophenol	979	D		ug/kg dry	2335.4	2350 U	42	30-140		
2,4,6-Trichlorophenol	733	D		ug/kg dry	2335.4	2350 U	31	20-110		
2,4-Dichlorophenol	1280	D		ug/kg dry	2335.4	2350 U	55	40-110		
2,4-Dimethylphenol	610	D		ug/kg dry	2335.4	2350 U	26*	30-105		
2,4-Dinitrophenol	618	D		ug/kg dry	2335.4	11700 U	26	25-130		
2,4-Dinitrotoluene	1540	D		ug/kg dry	2335.4	2350 U	66	50-115		
2,6-Dinitrotoluene	1770	D		ug/kg dry	2335.4	2350 U	76	40-120		
2-Chloronaphthalene	1920	D		ug/kg dry	2335.4	2350 U	82	45-115		
2-Chlorophenol	1550	D		ug/kg dry	2335.4	2350 U	66	45-105		
2-Methylnaphthalene	1760	D		ug/kg dry	2335.4	2350 U	75	45-110		
2-Methylphenol	1150	D		ug/kg dry	2335.4	2350 U	49	40-120		
2-Nitroaniline	1840	D		ug/kg dry	2335.4	11700 U	79	45-120		
2-Nitrophenol	1490	D		ug/kg dry	2335.4	2350 U	64	40-110		
3,3'-Dichlorobenzidine	438	D		ug/kg dry	2335.4	4690 U	19	15-130		
3-Nitroaniline	1220	D		ug/kg dry	2335.4	11700 U	52	40-130		
4,6-Dinitro-2-methylphenol	1070	D		ug/kg dry	2335.4	2350 U	46	20-140		
4-Bromophenyl Phenyl Ether	1920	D		ug/kg dry	2335.4	2350 U	82	45-115		
4-Chloro-3-methylphenol	1280	D		ug/kg dry	2335.4	2350 U	55	35-115		
4-Chloroaniline	992	D		ug/kg dry	2335.4	2350 U	42	10-100		
4-Chlorophenyl Phenyl Ether	1860	D		ug/kg dry	2335.4	2350 U	80	45-110		
3- and/or 4-Methylphenol	1200	D		ug/kg dry	2335.4	2350 U	52	40-120		
4-Nitroaniline	1070	D		ug/kg dry	2335.4	11700 U	46	40-130		
4-Nitrophenol	0.00	U		ug/kg dry	2335.4	11700 U	*	15-140		
Acenaphthene	1970	D		ug/kg dry	2335.4	2350 U	85	45-110		
Acenaphthylene	1960	D		ug/kg dry	2335.4	2350 U	84	45-115		
Anthracene	1830	D		ug/kg dry	2335.4	2350 U	78	45-130		
Benz[a]anthracene	1900	D		ug/kg dry	2335.4	2350 U	81	45-130		
Benzo[a] pyrene	1530	D		ug/kg dry	2335.4	2350 U	65	45-130		
Benzo[b] fluoranthene	1780	D		ug/kg dry	2335.4	2350 U	76	40-130		
Benzo[g,h,i] perylene	1700	D		ug/kg dry	2335.4	2350 U	73	45-125		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

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-MS2)		**Source: 1211102-04**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
Benzo[k] fluoranthene	1890	D		ug/kg dry	2335.4	2350 U	81	45-125		
Bis(2-chloroethoxy) methane	1920	D		ug/kg dry	2335.4	2350 U	82	45-110		
Bis(2-chloroethyl) ether	2010	D		ug/kg dry	2335.4	2350 U	86	40-110		
Bis(2-chloroisopropyl) ether	2090	D		ug/kg dry	2335.4	2350 U	89	30-115		
Bis(2-ethylhexyl) phthalate	1710	D		ug/kg dry	2335.4	2350 U	73	40-145		
Butyl Benzyl Phthalate	2040	D		ug/kg dry	2335.4	2350 U	88	50-125		
Carbazole	1800	D		ug/kg dry	2335.4	2350 U	77	40-140		
Chrysene	2130	D		ug/kg dry	2335.4	2350 U	91	45-130		
Dibenz[a,h]anthracene	1610	D		ug/kg dry	2335.4	2350 U	69	45-125		
Dibenzofuran	1970	D		ug/kg dry	2335.4	2350 U	84	45-120		
Diethyl Phthalate	1920	D		ug/kg dry	2335.4	2350 U	82	50-125		
Dimethyl Phthalate	1920	D		ug/kg dry	2335.4	2350 U	82	45-130		
Di-n-butyl Phthalate	1740	D		ug/kg dry	2335.4	2350 U	74	50-130		
Di-n-octyl Phthalate	1460	D		ug/kg dry	2335.4	2350 U	63	40-150		
Fluoranthene	1910	D		ug/kg dry	2335.4	2350 U	82	45-130		
Fluorene	1900	D		ug/kg dry	2335.4	2350 U	81	45-120		
Hexachlorobenzene	2110	D		ug/kg dry	2335.4	2350 U	90	45-130		
Hexachlorobutadiene	1740	D		ug/kg dry	2335.4	2350 U	75	45-105		
Hexachlorocyclopentadiene	1160	D		ug/kg dry	2335.4	2350 U	50	10-100		
Hexachloroethane	1430	D		ug/kg dry	2335.4	2350 U	61	35-110		
Indeno[1,2,3-cd]pyrene	1530	D		ug/kg dry	2335.4	2350 U	66	45-130		
Isophorone	1720	D		ug/kg dry	2335.4	2350 U	74	40-110		
Naphthalene	2080	D		ug/kg dry	2335.4	2350 U	89	40-110		
Nitrobenzene	1840	D		ug/kg dry	2335.4	2350 U	79	40-105		
N-Nitrosodi-n-propylamine	1980	D		ug/kg dry	2335.4	2350 U	85	30-130		
N-Nitrosodiphenylamine	1510	D		ug/kg dry	2335.4	2350 U	65	50-120		
Pentachlorophenol	0.00	U		ug/kg dry	2335.4	11700 U	*	25-120		
Phenanthrene	2120	D		ug/kg dry	2335.4	2350 U	91	50-120		
Phenol	1500	D		ug/kg dry	2335.4	2350 U	64	40-115		
Pyrene	2200	D		ug/kg dry	2335.4	2350 U	94	45-125		
Surrogate: 2-Fluorophenol	*1340*			*ug/kg dry*	*2919.3*		*46*	*25-121*		
Surrogate: Phenol-d5	*1560*			*ug/kg dry*	*2919.3*		*53*	*24-113*		
Surrogate: Nitrobenzene-d5	*1450*			*ug/kg dry*	*1946.2*		*75*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1590*			*ug/kg dry*	*1946.2*		*81*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*331*			*ug/kg dry*	*2919.3*		*11**	*19-122*		
Surrogate: p-Terphenyl-d14	*1510*			*ug/kg dry*	*1946.2*		*78*	*18-137*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0156 Project Manager: Joan Kessner	**Reported:** 12/06/2012 12:45

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-MSD2)		**Source: 1211102-04**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
1,2,4-Trichlorobenzene	1720	D		ug/kg dry	2375.1	2350 U	73	45-110	0.06	40
1,2-Dichlorobenzene	1860	D		ug/kg dry	2375.1	2350 U	78	45-105	8	40
1,3-Dichlorobenzene	1790	D		ug/kg dry	2375.1	2350 U	75	40-100	11	40
1,4-Dichlorobenzene	1840	D		ug/kg dry	2375.1	2350 U	77	35-105	7	40
2,4,5-Trichlorophenol	473	D		ug/kg dry	2375.1	2350 U	20*	30-140	71*	40
2,4,6-Trichlorophenol	342	D		ug/kg dry	2375.1	2350 U	14*	20-110	74*	40
2,4-Dichlorophenol	1180	D		ug/kg dry	2375.1	2350 U	50	40-110	9	40
2,4-Dimethylphenol	743	D		ug/kg dry	2375.1	2350 U	31	30-105	18	40
2,4-Dinitrophenol	579	D		ug/kg dry	2375.1	11700 U	24*	25-130	8	40
2,4-Dinitrotoluene	1550	D		ug/kg dry	2375.1	2350 U	65	50-115	0.6	40
2,6-Dinitrotoluene	1820	D		ug/kg dry	2375.1	2350 U	77	40-120	1	40
2-Chloronaphthalene	1960	D		ug/kg dry	2375.1	2350 U	82	45-115	0.1	40
2-Chlorophenol	1690	D		ug/kg dry	2375.1	2350 U	71	45-105	7	40
2-Methylnaphthalene	1760	D		ug/kg dry	2375.1	2350 U	74	45-110	2	40
2-Methylphenol	1380	D		ug/kg dry	2375.1	2350 U	58	40-120	16	40
2-Nitroaniline	1800	D		ug/kg dry	2375.1	11700 U	76	45-120	4	40
2-Nitrophenol	1490	D		ug/kg dry	2375.1	2350 U	63	40-110	2	40
3,3'-Dichlorobenzidine	590	D		ug/kg dry	2375.1	4690 U	25	15-130	28	40
3-Nitroaniline	1320	D		ug/kg dry	2375.1	11700 U	56	40-130	6	40
4,6-Dinitro-2-methylphenol	995	D		ug/kg dry	2375.1	2350 U	42	20-140	9	40
4-Bromophenyl Phenyl Ether	1940	D		ug/kg dry	2375.1	2350 U	82	45-115	0.6	40
4-Chloro-3-methylphenol	1250	D		ug/kg dry	2375.1	2350 U	53	35-115	3	40
4-Chloroaniline	1160	D		ug/kg dry	2375.1	2350 U	49	10-100	14	40
4-Chlorophenyl Phenyl Ether	1870	D		ug/kg dry	2375.1	2350 U	79	45-110	1	40
3- and/or 4-Methylphenol	1520	D		ug/kg dry	2375.1	2350 U	64	40-120	22	40
4-Nitroaniline	1260	D		ug/kg dry	2375.1	11700 U	53	40-130	15	40
4-Nitrophenol	147	D		ug/kg dry	2375.1	11700 U	6*	15-140		40
Acenaphthene	2050	D		ug/kg dry	2375.1	2350 U	86	45-110	2	40
Acenaphthylene	2020	D		ug/kg dry	2375.1	2350 U	85	45-115	1	40
Anthracene	1830	D		ug/kg dry	2375.1	2350 U	77	45-130	2	40
Benz[a]anthracene	1900	D		ug/kg dry	2375.1	2350 U	80	45-130	2	40
Benzo[a] pyrene	1580	D		ug/kg dry	2375.1	2350 U	67	45-130	2	40
Benzo[b] fluoranthene	1810	D		ug/kg dry	2375.1	2350 U	76	40-130	0.02	40
Benzo[g,h,i] perylene	1700	D		ug/kg dry	2375.1	2350 U	71	45-125	2	40
Benzo[k] fluoranthene	1910	D		ug/kg dry	2375.1	2350 U	81	45-125	0.4	40
Bis(2-chloroethoxy) methane	1950	D		ug/kg dry	2375.1	2350 U	82	45-110	0.5	40

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 12:45

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-MSD2)		**Source: 1211102-04**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
Bis(2-chloroethyl) ether	2080	D		ug/kg dry	2375.1	2350 U	88	40-110	2	40
Bis(2-chloroisopropyl) ether	2220	D		ug/kg dry	2375.1	2350 U	94	30-115	5	40
Bis(2-ethylhexyl) phthalate	1670	D		ug/kg dry	2375.1	2350 U	70	40-145	4	40
Butyl Benzyl Phthalate	1900	D		ug/kg dry	2375.1	2350 U	80	50-125	9	40
Carbazole	1890	D		ug/kg dry	2375.1	2350 U	80	40-140	3	40
Chrysene	2130	D		ug/kg dry	2375.1	2350 U	90	45-130	2	40
Dibenz[a,h]anthracene	1570	D		ug/kg dry	2375.1	2350 U	66	45-125	5	40
Dibenzofuran	2040	D		ug/kg dry	2375.1	2350 U	86	45-120	2	40
Diethyl Phthalate	1930	D		ug/kg dry	2375.1	2350 U	81	50-125	0.7	40
Dimethyl Phthalate	1950	D		ug/kg dry	2375.1	2350 U	82	45-130	0.2	40
Di-n-butyl Phthalate	1690	D		ug/kg dry	2375.1	2350 U	71	50-130	4	40
Di-n-octyl Phthalate	1430	D		ug/kg dry	2375.1	2350 U	60	40-150	4	40
Fluoranthene	2000	D		ug/kg dry	2375.1	2350 U	84	45-130	3	40
Fluorene	1940	D		ug/kg dry	2375.1	2350 U	82	45-120	0.5	40
Hexachlorobenzene	2100	D		ug/kg dry	2375.1	2350 U	89	45-130	2	40
Hexachlorobutadiene	1820	D		ug/kg dry	2375.1	2350 U	76	45-105	3	40
Hexachlorocyclopentadiene	1020	D		ug/kg dry	2375.1	2350 U	43	10-100	14	40
Hexachloroethane	1640	D		ug/kg dry	2375.1	2350 U	69	35-110	12	40
Indeno[1,2,3-cd]pyrene	1550	D		ug/kg dry	2375.1	2350 U	65	45-130	0.7	40
Isophorone	1730	D		ug/kg dry	2375.1	2350 U	73	40-110	0.9	40
Naphthalene	2140	D		ug/kg dry	2375.1	2350 U	90	40-110	1	40
Nitrobenzene	1880	D		ug/kg dry	2375.1	2350 U	79	40-105	0.3	40
N-Nitrosodi-n-propylamine	1960	D		ug/kg dry	2375.1	2350 U	82	30-130	3	40
N-Nitrosodiphenylamine	1510	D		ug/kg dry	2375.1	2350 U	64	50-120	2	40
Pentachlorophenol	0.00	U		ug/kg dry	2375.1	11700 U	*	25-120		40
Phenanthrene	2130	D		ug/kg dry	2375.1	2350 U	90	50-120	0.8	40
Phenol	1750	D		ug/kg dry	2375.1	2350 U	74	40-115	13	40
Pyrene	2050	D		ug/kg dry	2375.1	2350 U	86	45-125	9	40
Surrogate: 2-Fluorophenol	*1780*			*ug/kg dry*	*2968.9*		*60*	*25-121*		
Surrogate: Phenol-d5	*1880*			*ug/kg dry*	*2968.9*		*63*	*24-113*		
Surrogate: Nitrobenzene-d5	*1440*			*ug/kg dry*	*1979.3*		*73*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1640*			*ug/kg dry*	*1979.3*		*83*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*202*			*ug/kg dry*	*2968.9*		*7**	*19-122*		
Surrogate: p-Terphenyl-d14	*1420*			*ug/kg dry*	*1979.3*		*72*	*18-137*		

PREPARATION BENCH SHEET

L211273

Lionville Laboratory

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

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

00000038

PCBs

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 20:24

Analytical Report for Polychlorinated Biphenyls by SW846 8082

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X4	1211102-01	Soil	11/20/2012 08:24	11/27/2012 10:00
J1R5X5	1211102-02	Soil	11/20/2012 08:29	11/27/2012 10:00
J1R5X6	1211102-03	Soil	11/20/2012 08:33	11/27/2012 10:00
J1R5X7	1211102-04	Soil	11/20/2012 08:37	11/27/2012 10:00

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Case Narrative

Client: WC-HANFORD RC-190 KP0156
LVL #: 1211102

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

PCBs

Four (4) soil samples were collected on 11-20-2012.

The samples and associated QC samples were extracted 11-30-2012 and analyzed 12-04,05-2012 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 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

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. Sample J1R5X4 required a 2-fold instrument dilution, sample J1R5X5 required a 10-fold instrument dilution, and sample J1R5X6 required a 20-fold dilution due to a high concentration of target analytes.

8. The samples are reported on a dry weight basis.

9. All initial calibrations associated with this data set were within acceptance criteria.

10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria. Per SW846 Method 8000B, the attached table lists compounds where the %difference or drift was greater than 15%, and the mean across all compounds was used for evaluation of the continuing calibration. Results associated with these compounds are considered to have greater uncertainty.

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.

11. Patterns of Aroclors 1254 and 1260 were identified in these samples. The reported Aroclors were chosen based on the best pattern match and fit. Quantitation was performed using congeners common to both/all Aroclors to give the best overall total PCB concentration.

12. 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 data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

12/13/12
Date

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.

8082/A PCBs
Analytes with %Difference or %Drift >15%, Where Mean is Used for Continuing Calibration

Analyte	CCV1 12.04.12 2:40:48 pm		CCV2 12.04.12 10:52:15 pm		CCV3 12.05.12 9:47:39 am		CCV4 12.05.12 1:14:23 pm		CCV5		CCV6		CCV7		CCV8	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
Tetrachloro-meta-xylene (surrogate)																
Decachlorobiphenyl (surrogate)																
Aroclor 1016-1																
Aroclor 1016-2																
Aroclor 1016-3																
Aroclor 1016-4																
Aroclor 1016-5																
Aroclor 1260-1		15.4														
Aroclor 1260-2																
Aroclor 1260-3																
Aroclor 1260-4																
Aroclor 1260-5																
Mean %D or %Drift	4.4	10.1	0.5	1.7	-1.9	3.4	5.1	8.6								

Sample results reported from affected CCV:

CCV1: L211219-BIK4, BS4, BSD4, [redacted], 1211097-04, 1211100-04
[redacted]

CCV2: —

CCV3: 1211102-04, L211274-MS2, MSD2

CCV4:

CCV5:

CCV6:

CCV7:

CCV8:

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 20:24

J1R5X4
1211102-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	54.9	U	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1221	54.9	U	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1232	54.9	U	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1242	**33.4**	J, D	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1248	54.9	U	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1254	**407**	D	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1260	**44.4**	J, D	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1262	54.9	U	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Aroclor 1268	54.9	U	54.9	ug/kg dry	2	L211274	11/30/2012	12/04/2012	8082
Surrogate: Decachlorobiphenyl	*88 %*		*43-144*			*L211274*	*11/30/2012*	*12/04/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*104 %*		*52-141*			*L211274*	*11/30/2012*	*12/04/2012*	*8082*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 20:24

J1R5X5
1211102-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1221	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1232	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1242	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1248	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1254	**700**	D	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1260	**131**	J, D	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1262	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Aroclor 1268	152	U	152	ug/kg dry	10	L211274	11/30/2012	12/04/2012	8082
Surrogate: Decachlorobiphenyl	*100 %*		*43-144*			*L211274*	*11/30/2012*	*12/04/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*109 %*		*52-141*			*L211274*	*11/30/2012*	*12/04/2012*	*8082*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 20:24

J1R5X6
1211102-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1221	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1232	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1242	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1248	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1254	**3570**	D	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1260	**439**	D	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1262	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Aroclor 1268	300	U	300	ug/kg dry	20	L211274	11/30/2012	12/04/2012	8082
Surrogate: Decachlorobiphenyl	*93 %*		*43-144*			*L211274*	*11/30/2012*	*12/04/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*95 %*		*52-141*			*L211274*	*11/30/2012*	*12/04/2012*	*8082*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 20:24

J1R5X7
1211102-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	15.8	U	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1221	15.8	U	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1232	15.8	U	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1242	**18.5**		15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1248	15.8	U	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1254	**43.5**		15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1260	**6.93**	J	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1262	15.8	U	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Aroclor 1268	15.8	U	15.8	ug/kg dry	1	L211274	11/30/2012	12/05/2012	8082
Surrogate: Decachlorobiphenyl	*87 %*		*43-144*			*L211274*	*11/30/2012*	*12/05/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*103 %*		*52-141*			*L211274*	*11/30/2012*	*12/05/2012*	*8082*

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 20:24

Polychlorinated Biphenyls by SW846 8082 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L211274 - SW 3540C										
Blank (L211274-BLK1)				Prepared: 11/30/2012 Analyzed: 12/04/2012						
Aroclor 1016	13.3	U	13.3	ug/kg wet						
Aroclor 1221	13.3	U	13.3	ug/kg wet						
Aroclor 1232	13.3	U	13.3	ug/kg wet						
Aroclor 1242	13.3	U	13.3	ug/kg wet						
Aroclor 1248	13.3	U	13.3	ug/kg wet						
Aroclor 1254	13.3	U	13.3	ug/kg wet						
Aroclor 1260	13.3	U	13.3	ug/kg wet						
Aroclor 1262	13.3	U	13.3	ug/kg wet						
Aroclor 1268	13.3	U	13.3	ug/kg wet						
Surrogate: Decachlorobiphenyl	*25.5*			*ug/kg wet*	*33.333*		*77*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*24.8*			*ug/kg wet*	*33.337*		*74*	*52-141*		
LCS (L211274-BS1)				Prepared: 11/30/2012 Analyzed: 12/04/2012						
Aroclor 1016	144		13.3	ug/kg wet	166.67		87	50-138		
Aroclor 1260	150		13.3	ug/kg wet	166.67		90	50-148		
Surrogate: Decachlorobiphenyl	*25.6*			*ug/kg wet*	*33.333*		*77*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*32.5*			*ug/kg wet*	*33.337*		*98*	*52-141*		
Matrix Spike (L211274-MS2)		**Source: 1211102-04**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
Aroclor 1016	334		31.0	ug/kg dry	388.22	15.8 U	86	50-138		
Aroclor 1260	371		31.0	ug/kg dry	388.22	6.93	94	50-148		
Surrogate: Decachlorobiphenyl	*64.7*			*ug/kg dry*	*77.644*		*83*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*72.4*			*ug/kg dry*	*77.652*		*93*	*52-141*		
Matrix Spike Dup (L211274-MSD2)		**Source: 1211102-04**		Prepared: 11/30/2012 Analyzed: 12/05/2012						
Aroclor 1016	319		30.1	ug/kg dry	377.37	15.8 U	84	50-138	2	40
Aroclor 1260	392		30.1	ug/kg dry	377.37	6.93	102	50-148	8	40
Surrogate: Decachlorobiphenyl	*69.3*			*ug/kg dry*	*75.474*		*92*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*68.6*			*ug/kg dry*	*75.481*		*91*	*52-141*		

PREPARATION BENCH SHEET

L211274

Lionville Laboratory

Printed: 12/4/2012 2:17:38PM

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1201397**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211079-01	8082 PCBs RAD II	11/30/2012 17:10	5.12	10				250	URS/CH2M Oak Ridge (UCOR)	REPORT SOLIDS @LOD
1211079-02	8082 PCBs RAD II	11/30/2012 17:10	5.02	10				250	URS/CH2M Oak Ridge (UCOR)	REPORT SOLIDS @LOD
1211079-03	8082 PCBs RAD III	11/30/2012 17:10	4.034	10				250	URS/CH2M Oak Ridge (UCOR)	REPORT SOLIDS @LOD
1211079-04	8082 PCBs RAD III	11/30/2012 17:10	4.62	10				250	URS/CH2M Oak Ridge (UCOR)	REPORT SOLIDS @LOD
1211079-05	8082 PCBs RAD III	11/30/2012 17:10	5.14	10				250	URS/CH2M Oak Ridge (UCOR)	REPORT SOLIDS @LOD
1211102-01	8082 PCBs	11/30/2012 17:10	28.36	10				250	WC-Hanford, Inc.	
1211102-02	8082 PCBs	11/30/2012 17:10	30.73	10				250	WC-Hanford, Inc.	
1211102-03	8082 PCBs	11/30/2012 17:10	30.07	10				250	WC-Hanford, Inc.	
1211102-04	8082 PCBs	11/30/2012 17:10	30.01	10				250	WC-Hanford, Inc.	
L211274-BLK1	QC	11/30/2012 17:10	30	10				250		
L211274-BS1	QC	11/30/2012 17:10	30	10	1200902		250	250		
L211274-MS1	QC	11/30/2012 17:10	5.05	10	1200902	1211079-01	250	250		
L211274-MS2	QC	11/30/2012 17:10	15.3	10	1200902	1211102-04	250	250		
L211274-MSD1	QC	11/30/2012 17:10	5.2	10	1200902	1211079-01	250	250		
L211274-MSD2	QC	11/30/2012 17:10	15.74	10	1200902	1211102-04	250	250		

S cleared 12.04.12
Cu lot # B10X036

Extracts Relinquished By — Date 12/4/12 14:18

Extracts Received By — Date 12/04/12 14:20

PAHs

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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X4	1211102-01	Soil	11/20/2012 08:24	11/27/2012 10:00
J1R5X5	1211102-02	Soil	11/20/2012 08:29	11/27/2012 10:00
J1R5X6	1211102-03	Soil	11/20/2012 08:33	11/27/2012 10:00
J1R5X7	1211102-04	Soil	11/20/2012 08:37	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 KP0156
LVL #: 1211102

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

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Four (4) soil samples were collected on 11-20-2012.

The sample 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 a sample that met LvL's sample acceptance policy.

2. All required holding times for extraction and analysis have been met.

3. One (1) of eight (8) surrogate recoveries was outside 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. Seven (7) of thirty-two (32) matrix spike recoveries were outside QC acceptance criteria. A copy of the Sample Discrepancy Report (SDR # 12GC209) has been enclosed.

7. Samples J1R5X6, L211261-MS3, and L211261-MSD3 required an elevated final volume of 25 mls due to the nature of the matrix. Reporting limits have been adjusted to reflect this change. A copy of the Sample Discrepancy Report (SDR # 12GC207) has been enclosed.

8. The samples required instrument dilutions between 10 and 100-fold due to the nature of the matrix. Reporting limits have been adjusted to reflect the necessary dilutions.

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

10. The initial calibrations associated with this data set were within acceptance criteria.

11. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria. Per SW846 Method 8000B, the attached table lists compounds where the %difference or drift was greater than 15%, and the mean across all compounds was used for evaluation of the continuing calibration. Results associated with these compounds are considered to have greater uncertainty.

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. 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

12/13/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC209

Initiator: Catherine Carey
Date: 12/08/12
Client: WC Hanford

Batch: 121102
Samples: MS3 / MSD3
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: SOIL
Prep Batch: L211261

1. Reason for SDR

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

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

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

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

several spike recoveries outside QC limits

2. Known or Probable Causes(s)

High dilution required for analysis (results < LOD) and intergerence from indigenous analytes.

3. Discussion and Proposed Action

Other Description:

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

Narrate ID.

4. Project Manager Instructions...signature/date: 12/13/12

✓ 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: 12/13/12

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

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

QA-139-A-0208

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC207

Initiator: L. Kauffman
Date: 12-5-2012
Client: WC Hanford RC-190

Batch: 12111032 (102) LL-12-512 wrong #
Samples: 03, MS3, MSD3
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: Solid
Prep Batch: L 211261

1. Reason for SDR

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

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

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

c. Problem (Include all relevant specific results; attach data if necessary)
Sample extracted to 5mL Final volume. Unable to filter sample for analysis.
Diluted sample to 25mL Final volume and was able to filter.

2. Known or Probable Causes(s)
Extract was milky, off white in color. Sample matrix problem.

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:
report + narrate

12/5/12

4. Project Manager Instructions...signature/date: 12/13/12
✓ 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: 12/13/12
✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

000000056

8310 PAH

Analytes with %Difference or %Drift >15%, Where Mean is Used for Continuing Calibration

Analyte	12/5/12 0942 CCV1	12/5/12 1636 CCV2	12/5/12 2219 CCV3	CCV4	CCV5	CCV6	CCV7	CCV8
Triphenylene (surrogate)								
Naphthalene								
Acenaphthylene								
Acenaphthene								
Fluorene								
Phenanthrene								
Anthracene								
Fluoranthene								
Indeno[1,2,3-cd]pyrene								
Pyrene								
Benz[a]anthracene								
Chrysene								
Benzo[b]fluoranthene								
Benzo[k]fluoranthene								
Benzo[a]pyrene			-54.5					
Dibenz[a,h]anthracene								
Benzo[g,h,i]perylene								
Mean %D or %Drift	1.4/8.2	1.4/3.9	-0.1/-7.2					

Sample results reported from affected CCV:

CCV1: _____

CCV2: _____

CCV3: 1211102-02,03,04 1211103-01,02 L211261- MS3, MSD3, MS4, MSD4

CCV4: _____

CCV5: _____

CCV6: _____

CCV7: _____

CCV8: _____

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
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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

J1R5X4
1211102-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Acenaphthylene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Acenaphthene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Fluorene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Phenanthrene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Anthracene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Fluoranthene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Indeno[1,2,3-cd]pyrene	**273**	J, D	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Pyrene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Benz[a]anthracene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Chrysene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Benzo[b] fluoranthene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Benzo[k] fluoranthene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Benzo[a] pyrene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Dibenz[a,h]anthracene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Benzo[g,h,i] perylene	646	U	646	ug/kg dry	100	L211261	11/29/2012	12/05/2012	8310
Surrogate: Triphenylene	*53 % **		*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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

J1R5X5
1211102-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**271**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Acenaphthylene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Acenaphthene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Fluorene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Phenanthrene	**122**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Anthracene	**14.4**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Fluoranthene	**400**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Indeno[1,2,3-cd]pyrene	**188**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Pyrene	**195**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benz[a]anthracene	**179**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Chrysene	**165**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[b] fluoranthene	**219**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[k] fluoranthene	**129**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[a] pyrene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Dibenz[a,h]anthracene	**51.4**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[g,h,i] perylene	**413**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Surrogate: Triphenylene	*115 %*		*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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

J1R5X6

1211102-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**144**	J, D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Acenaphthylene	**225**	D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Acenaphthene	**134**	J, D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Fluorene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Phenanthrene	**65.9**	J, D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Anthracene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Fluoranthene	**107**	J, D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Indeno[1,2,3-cd]pyrene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Pyrene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benz[a]anthracene	**83.5**	J, D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Chrysene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[b] fluoranthene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[k] fluoranthene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[a] pyrene	**66.4**	J, D	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Dibenz[a,h]anthracene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[g,h,i] perylene	183	U	183	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Surrogate: Triphenylene	*110 %*		*68-129*			*L211261*	*11/29/2012*	*12/05/2012*	*8310*

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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

J1R5X7
1211102-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**76.2**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Acenaphthylene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Acenaphthene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Fluorene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Phenanthrene	**17.9**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Anthracene	38.9	U	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Fluoranthene	**73.9**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Indeno[1,2,3-cd]pyrene	**31.9**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Pyrene	**43.0**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benz[a]anthracene	**38.5**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Chrysene	**29.8**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[b] fluoranthene	**26.3**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[k] fluoranthene	**16.1**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[a] pyrene	**45.7**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Dibenz[a,h]anthracene	**10.3**	J, D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Benzo[g,h,i] perylene	**54.5**	D	38.9	ug/kg dry	10	L211261	11/29/2012	12/05/2012	8310
Surrogate: Triphenylene	*106 %*		*68-129*			*L211261*	*11/29/2012*	*12/05/2012*	*8310*

264 Welsh Pool Road
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Phone: 610-280-3000
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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

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*		

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/08/2012 09:19

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-MS3)		**Source: 1211102-03**		Prepared: 11/29/2012 Analyzed: 12/05/2012						
Naphthalene	477	D	187	ug/kg dry	187.06	144	178*	0-127		
Acenaphthylene	1130	D	187	ug/kg dry	187.06	225	483*	50-140		
Acenaphthene	327	D	187	ug/kg dry	187.06	134	103	17-139		
Fluorene	216	D	187	ug/kg dry	187.06	183 U	116	28-145		
Phenanthrene	282	D	187	ug/kg dry	187.06	65.9	116	30-152		
Anthracene	187	U	187	ug/kg dry	187.06	183 U	*	19-171		
Fluoranthene	614	D	187	ug/kg dry	187.06	107	271*	34-159		
Indeno[1,2,3-cd]pyrene	166	J, D	187	ug/kg dry	187.06	183 U	89	31-156		
Pyrene	213	D	187	ug/kg dry	187.06	183 U	114	33-152		
Benz[a]anthracene	241	D	187	ug/kg dry	187.06	83.5	84	32-157		
Chrysene	201	D	187	ug/kg dry	187.06	183 U	108	31-159		
Benzo[b] fluoranthene	223	D	187	ug/kg dry	187.06	183 U	119	33-164		
Benzo[k] fluoranthene	168	J, D	187	ug/kg dry	187.06	183 U	90	28-161		
Benzo[a] pyrene	169	J, D	187	ug/kg dry	187.06	66.4	55	29-149		
Dibenz[a,h]anthracene	147	J, D	187	ug/kg dry	187.06	183 U	79	27-153		
Benzo[g,h,i] perylene	148	J, D	187	ug/kg dry	187.06	183 U	79	32-157		
Surrogate: Triphenylene	*202*			*ug/kg dry*	*187.06*		*108*	*68-129*		
Matrix Spike Dup (L211261-MSD3)		**Source: 1211102-03**		Prepared: 11/29/2012 Analyzed: 12/05/2012						
Naphthalene	435	D	184	ug/kg dry	183.72	144	159*	0-127	12	40
Acenaphthylene	194	D	184	ug/kg dry	183.72	225	-17*	50-140	215*	40
Acenaphthene	174	J, D	184	ug/kg dry	183.72	134	22	17-139	130*	40
Fluorene	142	J, D	184	ug/kg dry	183.72	183 U	78	28-145	39	40
Phenanthrene	205	D	184	ug/kg dry	183.72	65.9	76	30-152	42*	40
Anthracene	184	U	184	ug/kg dry	183.72	183 U	*	19-171		40
Fluoranthene	394	D	184	ug/kg dry	183.72	107	156	34-159	54*	40
Indeno[1,2,3-cd]pyrene	146	J, D	184	ug/kg dry	183.72	183 U	80	31-156	11	40
Pyrene	171	J, D	184	ug/kg dry	183.72	183 U	93	33-152	20	40
Benz[a]anthracene	191	D	184	ug/kg dry	183.72	83.5	58	32-157	36	40
Chrysene	154	J, D	184	ug/kg dry	183.72	183 U	84	31-159	25	40
Benzo[b] fluoranthene	212	D	184	ug/kg dry	183.72	183 U	116	33-164	3	40
Benzo[k] fluoranthene	172	J, D	184	ug/kg dry	183.72	183 U	94	28-161	4	40
Benzo[a] pyrene	174	J, D	184	ug/kg dry	183.72	66.4	58	29-149	7	40
Dibenz[a,h]anthracene	148	J, D	184	ug/kg dry	183.72	183 U	80	27-153	2	40
Benzo[g,h,i] perylene	203	D	184	ug/kg dry	183.72	183 U	110	32-157	33	40
Surrogate: Triphenylene	*186*			*ug/kg dry*	*183.72*		*101*	*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: 120061**

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 18:31 — Extracts Relinquished By — Date

S Zah 12/05/12 8:40 — Extracts Received By — 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: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5X4	1211102-01	Soil	11/20/2012 08:24	11/27/2012 10:00
J1R5X5	1211102-02	Soil	11/20/2012 08:29	11/27/2012 10:00
J1R5X6	1211102-03	Soil	11/20/2012 08:33	11/27/2012 10:00
J1R5X7	1211102-04	Soil	11/20/2012 08:37	11/27/2012 10:00

LIONVILLE LABORATORY
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Case Narrative

Client: WC-HANFORD RC-190
LVL#: 1211102
SDG/SAF#: KP0156/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 4 soil samples and 4 leachate samples.

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

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

   Sample J1R5X7 was reanalyzed and reported with a 6-fold dilution for Mercury due to high concentration of Mercury in the sample.

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

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 (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}.

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.

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 4 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, Iron, and Silicon.

12. The duplicate analysis for 1 analyte was outside 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 leachate sample result for Chromium was less than ten times the MDL.

13. The TCLP extract from sample J1R5X5 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 50-fold dilution. The MS recovery 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory

2/6/12
Date

alm/11-102TChg%

264 Welsh Pool Road
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Phone: 610-280-3000
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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

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.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

J1R5X4
1211102-01 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**5520**		27.6	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Antimony	3.31	U	3.31	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Arsenic	**2.07**	B	5.52	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Barium	**143**		2.76	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Beryllium	1.10	U	1.10	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Boron	**4.87**	B	11.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cadmium	**1.65**		1.10	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Calcium	**15200**		552	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Chromium	**11.5**		1.10	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cobalt	11.0	U	11.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Copper	**33.4**		5.52	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Iron	**15000**		110	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Lead	**49.0**		2.76	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Magnesium	**3420**		414	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Manganese	**266**		27.6	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Molybdenum	**4.20**	B	11.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Nickel	**13.9**	B	22.1	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Potassium	**1580**	B	2210	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Selenium	1.66	U	1.66	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silicon	**558**		11.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silver	1.10	U	1.10	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Sodium	**193**	B	276	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Vanadium	**40.0**		13.8	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Zinc	**126**		55.2	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Mercury	**0.0362**	B	0.0517	mg/kg dry	1	L211252	11/29/2012	12/03/2012	7471A

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

J1R5X4
1211102-01 (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	**0.483**		0.00500	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Cadmium	**0.00146**	B	0.0150	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Chromium	**0.00716**	B	0.0250	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Lead	**0.0235**	B	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	0.000200	U	0.000200	mg/L	1	L211272	11/30/2012	12/03/2012	7470

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

J1R5X5
1211102-02 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**5240**		13.7	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Antimony	**17.2**		1.65	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Arsenic	**2.06**	B	2.75	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Barium	**83.6**		1.37	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Beryllium	**0.208**	B	0.549	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Boron	**6.57**		5.49	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cadmium	**3.21**		0.549	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Calcium	**35900**		275	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Chromium	**10.3**		0.549	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cobalt	**7.97**		5.49	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Copper	**64.5**		2.75	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Iron	**23500**		54.9	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Lead	**88.2**		1.37	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Magnesium	**15900**		206	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Manganese	**286**		13.7	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Molybdenum	**0.584**	B	5.49	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Nickel	**11.5**		11.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Potassium	**832**	B	1100	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Selenium	0.824	U	0.824	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silicon	**259**		5.49	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silver	**0.607**		0.549	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Sodium	**432**		137	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Vanadium	**58.8**		6.87	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Zinc	**479**		27.5	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Mercury	**0.236**		0.0293	mg/kg dry	1	L211252	11/29/2012	12/03/2012	7471A

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

J1R5X5
1211102-02 (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	**0.950**		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	**0.00404**	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	0.000200	U	0.000200	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: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

J1R5X6
1211102-03 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7680**		13.7	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Antimony	**8.18**		1.64	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Arsenic	**5.32**		2.74	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Barium	**109**		1.37	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Beryllium	**0.268**	B	0.548	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Boron	**5.50**		5.48	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cadmium	**1.96**		0.548	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Calcium	**15200**		274	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Chromium	**42.2**		0.548	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cobalt	**8.36**		5.48	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Copper	**6630**		2.74	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Iron	**23000**		54.8	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Lead	**752**		1.37	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Magnesium	**4590**		205	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Manganese	**372**		13.7	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Molybdenum	**5.08**	B	5.48	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Nickel	**69.2**		11.0	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Potassium	**1710**		1100	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Selenium	0.822	U	0.822	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silicon	**366**		5.48	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silver	**1.68**		0.548	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Sodium	**593**		137	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Vanadium	**47.4**		6.85	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Zinc	**777**		27.4	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Mercury	**0.115**		0.0261	mg/kg dry	1	L211252	11/29/2012	12/03/2012	7471A

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

J1R5X6
1211102-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	**0.0197**	B	0.0750	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Barium	**0.518**		0.00500	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Cadmium	**0.0283**		0.0150	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Chromium	**0.00792**	B	0.0250	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Lead	**0.898**		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	0.000200	U	0.000200	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: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

J1R5X7
1211102-04 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**9090**		16.8	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Antimony	**7.62**		2.02	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Arsenic	**4.74**		3.36	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Barium	**182**		1.68	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Beryllium	**0.318**	B	0.672	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Boron	**6.42**	B	6.72	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cadmium	**27.1**		0.672	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Calcium	**16300**		336	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Chromium	**28.7**		0.672	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Cobalt	**9.83**		6.72	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Copper	**83.1**		3.36	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Iron	**42000**		67.2	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Lead	**216**		1.68	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Magnesium	**4970**		252	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Manganese	**483**		16.8	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Molybdenum	**2.34**	B	6.72	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Nickel	**25.9**		13.4	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Potassium	**1470**		1340	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Selenium	1.01	U	1.01	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silicon	**536**		6.72	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Silver	**2.64**		0.672	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Sodium	**1040**		168	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Vanadium	**48.5**		8.41	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Zinc	**1250**		33.6	mg/kg dry	3	L211251	11/29/2012	12/03/2012	6010B
Mercury	**4.62**		0.173	mg/kg dry	6	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: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

J1R5X7
1211102-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	**0.0174**	B	0.0750	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Barium	**0.576**		0.00500	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Cadmium	**0.0105**	B	0.0150	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Chromium	**0.0153**	B	0.0250	mg/L	5	L211264	11/30/2012	12/04/2012	6010
Lead	**0.0213**	B	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	0.000200	U	0.000200	mg/L	1	L211272	11/30/2012	12/03/2012	7470

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WC-Hanford, Inc.	Project: RC-190	
2620 Fermi Avenue	Project Number: KP0156	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/05/2012 07:27

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-DUP2)			**Source: 1211102-01**	Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	5640		26.6	mg/kg dry		5520			2.21	20
Antimony	3.19	U	3.19	mg/kg dry		3.31 U				20
Arsenic	2.09	B	5.32	mg/kg dry		2.07			0.812	20
Barium	136		2.66	mg/kg dry		143			4.99	20
Beryllium	1.06	U	1.06	mg/kg dry		1.10 U				20
Boron	5.03	B	10.6	mg/kg dry		4.87			3.41	20
Cadmium	1.54		1.06	mg/kg dry		1.65			7.34	20
Calcium	14800		532	mg/kg dry		15200			2.94	20
Chromium	13.1		1.06	mg/kg dry		11.5			13.2	20
Cobalt	10.6	U	10.6	mg/kg dry		11.0 U				20
Copper	35.1		5.32	mg/kg dry		33.4			4.86	20

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

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-DUP2)		**Source: 1211102-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Iron	14800		106	mg/kg dry		15000			0.937	20
Lead	60.3		2.66	mg/kg dry		49.0			20.8*	20
Magnesium	3130		399	mg/kg dry		3420			8.82	20
Manganese	244		26.6	mg/kg dry		266			8.63	20
Molybdenum	3.59	B	10.6	mg/kg dry		4.20			15.7	20
Nickel	16.3	B	21.3	mg/kg dry		13.9			15.6	20
Potassium	1580	B	2130	mg/kg dry		1580			0.349	20
Selenium	1.60	U	1.60	mg/kg dry		1.66 U				20
Silicon	660		10.6	mg/kg dry		558			16.8	20
Silver	1.06	U	1.06	mg/kg dry		1.10 U				20
Sodium	159	B	266	mg/kg dry		193			19.4	20
Vanadium	40.4		13.3	mg/kg dry		40.0			1.15	20
Zinc	124		53.2	mg/kg dry		126			1.41	20
Matrix Spike (L211251-MS2)		**Source: 1211102-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	6790		25.2	mg/kg dry	336.45	5520	379*	75-125		
Antimony	54.5		3.03	mg/kg dry	84.113	3.31 U	64.8*	75-125		
Arsenic	318		5.05	mg/kg dry	336.45	2.07	93.9	75-125		
Barium	452		2.52	mg/kg dry	336.45	143	91.9	75-125		
Beryllium	8.18		1.01	mg/kg dry	8.4113	1.10 U	97.3	75-125		
Boron	164		10.1	mg/kg dry	168.23	4.87	94.4	75-125		
Cadmium	8.99		1.01	mg/kg dry	8.4113	1.65	87.2	75-125		
Calcium	19200		505	mg/kg dry	4205.7	15200	94.8	75-125		
Chromium	43.1		1.01	mg/kg dry	33.645	11.5	93.9	75-125		
Cobalt	83.8		10.1	mg/kg dry	84.113	11.0 U	99.6	75-125		
Copper	73.0		5.05	mg/kg dry	42.057	33.4	94.2	75-125		
Iron	13800		101	mg/kg dry	168.23	15000	-671*	75-125		
Lead	127		2.52	mg/kg dry	84.113	49.0	92.8	75-125		
Magnesium	7190		379	mg/kg dry	4205.7	3420	89.6	75-125		
Manganese	332		25.2	mg/kg dry	84.113	266	78.3	75-125		
Molybdenum	166		10.1	mg/kg dry	168.23	4.20	96.1	75-125		
Nickel	93.6		20.2	mg/kg dry	84.113	13.9	94.7	75-125		
Potassium	5490		2020	mg/kg dry	4205.7	1580	93.1	75-125		
Selenium	318		1.51	mg/kg dry	336.45	1.66 U	94.5	75-125		
Silicon	1800		10.1	mg/kg dry	168.23	558	738*	75-125		
Silver	8.00		1.01	mg/kg dry	8.4113	1.10 U	95.1	75-125		
Sodium	4260		252	mg/kg dry	4205.7	193	96.7	75-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

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-MS2)		**Source: 1211102-01**	Prepared: 11/29/2012 Analyzed: 12/03/2012						
Vanadium	122	12.6	mg/kg dry	84.113	40.0	98.0	75-125		
Zinc	207	50.5	mg/kg dry	84.113	126	96.3	75-125		
Post Spike (L211251-PS2)		**Source: 1211102-01**	Prepared: 11/29/2012 Analyzed: 12/03/2012						
Aluminum	89200		ug/L	66000	30000	89.7	75-125		
Antimony	310		ug/L	300.00	3.98	102	75-125		
Iron	193000		ug/L	126000	81300	88.7	75-125		
Silicon	9800		ug/L	6300.0	3030	108	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		

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: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

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-DUP2)		**Source: 1211102-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Mercury	0.0428	B	0.0517	mg/kg dry		0.0362			16.7	20
Matrix Spike (L211252-MS2)		**Source: 1211102-01**		Prepared: 11/29/2012 Analyzed: 12/03/2012						
Mercury	0.336		0.0488	mg/kg dry	0.27103	0.0362	111	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: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

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-DUP3)		**Source: 1211102-02**		Prepared: 11/30/2012 Analyzed: 12/04/2012						
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.939		0.00500	mg/L		0.950			1.16	20
Cadmium	0.0150	U	0.0150	mg/L		0.0150 U				20
Chromium	0.00284	B	0.0250	mg/L		0.00404			35.0*	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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-190 Project Number: KP0156 Project Manager: Joan Kessner	**Reported:** 12/05/2012 07:27

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-MS3)		**Source: 1211102-02**		Prepared: 11/30/2012 Analyzed: 12/04/2012						
Arsenic	5.14		0.0750	mg/L	5.0000	0.0750 U	103	50-1000		
Barium	95.6		0.00500	mg/L	100.00	0.950	94.7	50-1000		
Cadmium	1.01		0.0150	mg/L	1.0000	0.0150 U	101	50-1000		
Chromium	4.94		0.0250	mg/L	5.0000	0.00404	98.8	50-1000		
Lead	4.73		0.0500	mg/L	5.0000	0.0500 U	94.6	50-1000		
Selenium	0.998		0.100	mg/L	1.0000	0.100 U	99.8	50-1000		
Silver	3.40		0.0300	mg/L	5.0000	0.0300 U	68.1	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-DUP3)		**Source: 1211102-02**		Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.000200	U	0.000200	mg/L		0.000200 U				20
Matrix Spike (L211272-MS3)		**Source: 1211102-02**		Prepared: 11/30/2012 Analyzed: 12/03/2012						
Mercury	0.196		0.0100	mg/L	0.20000	0.000200 U	98.0	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.
NOTE: All temperatures are recorded as corrected temperatures

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

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	roots	
L211251-DUP1		0.57	50			↓	↓	↓	
MS1	0.5	0.59	50			↓	↓	↓	
121102-01		0.53	50			coarse	dark brown compost	burs/veg.	
L211251-DUP2		0.55	50			↓	↓	↓	
MS2	0.5	0.58	50			↓	↓	↓	
121102-02		0.64	50			coarse	dark gray soil, white	lumps roots	
03		0.62	50			fine	dark brown soil	roots, nail	
04		0.53	50			coarse	dark brown soil	roots, veg.	
121103-01		0.57	50			coarse	brown soil w/ white	roots, nail, unknown	flat
L211251-DUP3		0.55	50			↓	↓ ↓	↓	solid
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 0000003190
HCl L13029
H_2O_2 L1A03
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 #:

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 11:57:48 AM

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 AJM 12/4/12

Extracts Relinquished By Date

Extracts Received By Date

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
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			

Extracts Relinquished By — Date: 12/3/12

Extracts Received By — Date: 12/03/12

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 ug/l		0.100		10 ml	50	
1.0 ug/l		0.500		10 ml	50	
2.0 ug/l		1.000		10 ml	50	
5.0 ug/l		2.500		10 ml	50	
10.0 ug/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: [illegible] 12/4/12

se book # 1153 for std traceability information

Soil LCS True Value = 1.73 mg/Kg
Standard # 1201014 (*)

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

ME-HgCVAA-Prep0910

Page #:

000000091

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1153

Analyst: MMW
Date 11/29/12 – 11/30/12
Start Time/Temp: 0852
End Time/Temp: See Pg 0852

Instrument ID: HG3.3
Balance # 614 ~~B24~~ /NA W.E. 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-DUP-5				0.37	50	
MS5		0.500	1.0	0.39	50	

MW 11/30/12

Standard:	ID	Prep Date/Time
ICAL/MS	0852	
ICV/CCV/LCS		

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

Reviewed By/Date: aym 12/4/12

se book # 1153 for std traceability information

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

ME-HgCVAA-Prep0910

Page #:

000000092

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.

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

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
1211037-01		50 ml	50	<	TC		colorless/clear	~~[illegible]~~	
L211264-DP1		50	50	<					
MS1	0.5	50	50						
1211037-02		50	50	<			colorless/clear		
03		50	50	<			colorless/clear		
1211101-01		50	50	<			colorless/clear		
L211264-DP2		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#: 1201196
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:
AAM 12/4/12

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Signed\SPI\Metals Digestion log.doc

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 2 (circle one)
3

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# : See page 094
LCS#: See page 094

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

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 (circle one) B

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	RI 1201235	11/30/12 1145
ICV/CCV/LCS	CIV 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
Water LCS Spiking Concentration: 1.0 µg/ml

* based 1201234 (10 µg/ml)

ME-HgCVAA-Prep0910

Page #:

000000097

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1153

Analyst: [signature]
Date 11/30/12
Start Time/Temp: see pg 0885
End Time/Temp: see pg

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

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 [signature]

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	see page 0885	

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

se book # 1153 for std traceability information

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

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

* used 1201234 (1 Dup/ml)

ME-HgCVAA-Prep0910

Page #:

000000098

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 22 **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 [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: 1311.1	Tumbler Speed: 31 RPM Leachate Batch #: L211223 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: 11-29-12 RH 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 CPM 12/4/12 Page #