SAF-RC-150
300 Area D4 Waste Sites – Other
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 12/18/12
INITIAL/DATE

COMMENTS:

SDG K4026 SAF-RC-150

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location/Waste Site: 300 RRLWS
Clean-Out "I" (10 ft depth)

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

17 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 #	1211045
SDG #	K4026
SAF #	RC-150
Date Received	11/14/12
# Samples	1
Matrix	OTHER SOLID
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	X
Inorganics	

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

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 53 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only: 1211045

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client: WC HANFORD SAF# RC-150
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: Std TAT: 21
Date Rec'd: 11/14/12 Date Due: 12/5/12

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

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
W Water, WW Waste Water, GW Groundwater, WST Waste, WI Wipe, SO Solid, S Soil, SL Sludge, SE Sediment, PC Paint Chips, O Oil, NAL Non-Aqueous Liquid, L Leachate, A Air, T Tissue, F Fish	01	J1R5D9 Rad III	✓	✓	WI	11-7-12	1115

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

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

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	11/14/12	1010

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

0000000003

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-150-032 | Page 1 of 1

Collector M. Riddell	**Company Contact** Joan Kessner	**Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH
Price Code 9L	**Data Turnaround** 21 Days		
Project Designation 300 Area D4 Waste Sites - Other	**Sampling Location** 300 RRLWS - Clean-Out "I" (10 ft depth)		**SAF No.** RC-150
Ice Chest No. ~~N/A~~ AJ 11-7-12 WCH-12-028	**Field Logbook No.** EL-1663-04	**COA** RRRLWS2600	**Method of Shipment** (Fed Ex) Hand Deliver
Shipped To ~~EBERLINE SERVICES~~ AJ 11-7-12 (LIONVILLE)	**Offsite Property No.** ~~N/A~~ AJ 11-7-12 NA		**Bill of Lading/Air Bill No.** See ~~OSPC~~ RSR AJ 11-12-12

POSSIBLE SAMPLE HAZARDS/REMARKS

~~Potential~~ Radioactive DOT LTD QTY AJ 11-12-12

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C AJ 11-7-12	Cool 4C	None						
Type of Container	G/P	~~aG~~ P	~~aG~~ P	G/P						
No. of Container(s)	1	1	1 AJ 11-7-12	* 0						
Volume	60mL	60mL	~~125mL~~ 60ml	60mL AJ						

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions. *	Semi-VOA - 8270A (TCL) RCF	PAHs - 8310 34938	RCF GEA Shipping Screen AJ 11-7-12						
J1R5D9	OTHER	11/7/2012	1115	X	X	X							

REVIEWED BY CMB DATE 11-13-12

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TPMC Mike Rhoads	11-7-12 13:30	WCH DAVID BECKER	11/7/12 1330
DAVID BECKER	Date/Time 11/7/12 1600	1066#3 A. Freier	Date/Time 1600 11-7-12
WCH A. Freier	Date/Time 1060#3 11-13-12 0940	Fed Ex	Date/Time
Fed Ex	11-14-12 1010	VICTOR HERNANDEZ	11-14-12 1610
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

~~* TRANS SHIP SAMPLE DESIGNATED FOR RCF SHIPPING SCREEN.~~

* Cooling not maintained AJ 11-7-12

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

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 #: SAF# RC-150

Date: 11/14/12

LvL Batch #: 1211045

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 794066696043
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 5°	°C	Cooler # WCH-12-028
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.doc

SEMIVOLATILES

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

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5D9	1211045-01	Other Solid	11/07/2012 11:15	11/14/2012 10:10

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-150 K4026
LVL #: 1211045

W.O. #: 60049-001-001-0001-00
Date Received: 11-14-2012

SEMIVOLATILE

One (1) other solid sample was collected on 11-07-2012.

The sample and associated QC samples were extracted 11-15-2012 and analyzed 11-25-2012 and 11-26-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for client specified target compounds.

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

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

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

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

4. Sample J1R5D9 required a 3-fold dilution due to high levels of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

5. All obtainable surrogate recoveries were within acceptance criteria.

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

7. Four (4) of one hundred twenty eight (128) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS203) has been enclosed.

8. Due to insufficient sample volume matrix QC was not performed. However, blank spike QC was performed with these samples to demonstrate that systems were in control.

9. The sample was reported on a wet weight 'as received' basis.

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

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. 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

12/17/12
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: 8.73 CALIBRATION: 1211023 11/24/12

>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:	K4026
Client:	WC-Hanford, Inc.	Project:	RC-150
Sequence:	2110154	Instrument:	HP5972N
Matrix:	Wipe	Calibration:	1211023

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2110154-TUN1	N112401.D	11/24/12 13:19
Cal Standard	2110154-CAL5	N112402.D	11/24/12 13:46
Cal Standard	2110154-CAL2	N112404.D	11/24/12 15:19
Cal Standard	2110154-CAL3	N112405.D	11/24/12 16:06
Cal Standard	2110154-CAL4	N112406.D	11/24/12 16:52
Cal Standard	2110154-CAL1	N112408.D	11/24/12 18:25
Secondary Cal Check	2110154-SCV1	N112414.D	11/24/12 23:04

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K4026
Client:	WC-Hanford, Inc.	Project:	RC-150
Sequence:	2110156	Instrument:	HP5972N
Matrix:	Wipe	Calibration:	1211023

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2110156-TUN1	N112501.D	11/25/12 08:28
Calibration Check	2110156-CCV1	N112502.D	11/25/12 08:53
LCS	L211128-BS1	N112503.D	11/25/12 09:39
LCS Dup	L211128-BSD1	N112504.D	11/25/12 10:25
Blank	L211128-BLK1	N112505.D	11/25/12 11:11
J1R5D9	1211045-01	N112514.D	11/25/12 18:10

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K4026
Client:	WC-Hanford, Inc.	Project:	RC-150
Sequence:	2110157	Instrument:	HP5972N
Matrix:	Wipe	Calibration:	1211023

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2110157-TUN1	N112601.D	11/26/12 06:12
Calibration Check	2110157-CCV1	N112602.D	11/26/12 06:39
J1R5D9	1211045-01RE1	N112605.D	11/26/12 09:03

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12NS203

Initiator: Sharon Saylor
Date: 11-28-12
Client: W Hanford

Batch: 1211045
Samples: L1112F-BS1, BSD1
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: Wipe
Prep Batch: L1112F

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)

several Spike recoveries outside QC acceptance limits in L1112F-BS1 and L1112F-BSD1 (4,6,-Dinitro-2-methylphenol, 2-nitroaniline, 4-nitroaniline) RG 11/28/12

2. Known or Probable Causes(s) Acidic phenols, anilines subject to erratic chromatographic behavior. Associated sample nondetect for these compounds.

RG 11/28/12

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: 12/17/12

__ 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: 12/17/12 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-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

J1R5D9
1211045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
1,2-Dichlorobenzene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
1,3-Dichlorobenzene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
1,4-Dichlorobenzene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,4,5-Trichlorophenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,4,6-Trichlorophenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,4-Dichlorophenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,4-Dimethylphenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,4-Dinitrophenol	50.0	U	50.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,4-Dinitrotoluene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2,6-Dinitrotoluene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2-Chloronaphthalene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2-Chlorophenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2-Methylnaphthalene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2-Methylphenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2-Nitroaniline	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
2-Nitrophenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
3,3'-Dichlorobenzidine	50.0	U	50.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
3-Nitroaniline	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4,6-Dinitro-2-methylphenol	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4-Bromophenyl Phenyl Ether	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4-Chloro-3-methylphenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4-Chloroaniline	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4-Chlorophenyl Phenyl Ether	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
3- and/or 4-Methylphenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4-Nitroaniline	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
4-Nitrophenol	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Acenaphthene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Acenaphthylene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Anthracene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Benz[a]anthracene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Benzo[a] pyrene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Benzo[b] fluoranthene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Benzo[g,h,i] perylene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Benzo[k] fluoranthene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Bis(2-chloroethoxy) methane	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

J1R5D9
1211045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Bis(2-chloroisopropyl) ether	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Bis(2-ethylhexyl) phthalate	**127**	E	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Butyl Benzyl Phthalate	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Carbazole	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Chrysene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Dibenz[a,h]anthracene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Dibenzofuran	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Diethyl Phthalate	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Dimethyl Phthalate	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Di-n-butyl Phthalate	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Di-n-octyl Phthalate	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Fluoranthene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Fluorene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Hexachlorobenzene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Hexachlorobutadiene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Hexachlorocyclopentadiene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Hexachloroethane	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Indeno[1,2,3-cd]pyrene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Isophorone	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Naphthalene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Nitrobenzene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
N-Nitrosodi-n-propylamine	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
N-Nitrosodiphenylamine	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Pentachlorophenol	25.0	U	25.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Phenanthrene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Phenol	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Pyrene	10.0	U	10.0	ug/sample	1	L211128	11/15/2012	11/25/2012	8270C
Surrogate: 2-Fluorophenol	*68 %*		*21-100*			*L211128*	*11/15/2012*	*11/25/2012*	*8270C*
Surrogate: Phenol-d5	*68 %*		*10-94*			*L211128*	*11/15/2012*	*11/25/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*74 %*		*35-114*			*L211128*	*11/15/2012*	*11/25/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*73 %*		*43-116*			*L211128*	*11/15/2012*	*11/25/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*76 %*		*10-123*			*L211128*	*11/15/2012*	*11/25/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*77 %*		*33-141*			*L211128*	*11/15/2012*	*11/25/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

J1R5D9
1211045-01RE1 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
1,2-Dichlorobenzene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
1,3-Dichlorobenzene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
1,4-Dichlorobenzene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,4,5-Trichlorophenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,4,6-Trichlorophenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,4-Dichlorophenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,4-Dimethylphenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,4-Dinitrophenol	150	U	150	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,4-Dinitrotoluene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2,6-Dinitrotoluene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2-Chloronaphthalene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2-Chlorophenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2-Methylnaphthalene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2-Methylphenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2-Nitroaniline	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
2-Nitrophenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
3,3'-Dichlorobenzidine	150	U	150	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
3-Nitroaniline	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4,6-Dinitro-2-methylphenol	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4-Bromophenyl Phenyl Ether	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4-Chloro-3-methylphenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4-Chloroaniline	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4-Chlorophenyl Phenyl Ether	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
3- and/or 4-Methylphenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4-Nitroaniline	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
4-Nitrophenol	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Acenaphthene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Acenaphthylene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Anthracene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Benz[a]anthracene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Benzo[a] pyrene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Benzo[b] fluoranthene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Benzo[g,h,i] perylene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Benzo[k] fluoranthene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Bis(2-chloroethoxy) methane	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

J1R5D9
1211045-01RE1 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Bis(2-chloroisopropyl) ether	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Bis(2-ethylhexyl) phthalate	**127**	D	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Butyl Benzyl Phthalate	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Carbazole	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Chrysene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Dibenz[a,h]anthracene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Dibenzofuran	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Diethyl Phthalate	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Dimethyl Phthalate	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Di-n-butyl Phthalate	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Di-n-octyl Phthalate	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Fluoranthene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Fluorene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Hexachlorobenzene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Hexachlorobutadiene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Hexachlorocyclopentadiene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Hexachloroethane	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Indeno[1,2,3-cd]pyrene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Isophorone	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Naphthalene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Nitrobenzene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
N-Nitrosodi-n-propylamine	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
N-Nitrosodiphenylamine	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Pentachlorophenol	75.0	U	75.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Phenanthrene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Phenol	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Pyrene	30.0	U	30.0	ug/sample	3	L211128	11/15/2012	11/26/2012	8270C
Surrogate: 2-Fluorophenol	*66 %*		*21-100*			*L211128*	*11/15/2012*	*11/26/2012*	*8270C*
Surrogate: Phenol-d5	*68 %*		*10-94*			*L211128*	*11/15/2012*	*11/26/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*67 %*		*35-114*			*L211128*	*11/15/2012*	*11/26/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*64 %*		*43-116*			*L211128*	*11/15/2012*	*11/26/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*57 %*		*10-123*			*L211128*	*11/15/2012*	*11/26/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*68 %*		*33-141*			*L211128*	*11/15/2012*	*11/26/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

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 L211128 - SW 3540C										
Blank (L211128-BLK1)				Prepared: 11/15/2012 Analyzed: 11/25/2012						
1,2,4-Trichlorobenzene	10.0	U	10.0	ug/sample						
1,2-Dichlorobenzene	10.0	U	10.0	ug/sample						
1,3-Dichlorobenzene	10.0	U	10.0	ug/sample						
1,4-Dichlorobenzene	10.0	U	10.0	ug/sample						
2,4,5-Trichlorophenol	10.0	U	10.0	ug/sample						
2,4,6-Trichlorophenol	10.0	U	10.0	ug/sample						
2,4-Dichlorophenol	10.0	U	10.0	ug/sample						
2,4-Dimethylphenol	10.0	U	10.0	ug/sample						
2,4-Dinitrophenol	50.0	U	50.0	ug/sample						
2,4-Dinitrotoluene	10.0	U	10.0	ug/sample						
2,6-Dinitrotoluene	10.0	U	10.0	ug/sample						
2-Chloronaphthalene	10.0	U	10.0	ug/sample						
2-Chlorophenol	10.0	U	10.0	ug/sample						
2-Methylnaphthalene	10.0	U	10.0	ug/sample						
2-Methylphenol	10.0	U	10.0	ug/sample						
2-Nitroaniline	25.0	U	25.0	ug/sample						
2-Nitrophenol	10.0	U	10.0	ug/sample						
3,3'-Dichlorobenzidine	50.0	U	50.0	ug/sample						
3-Nitroaniline	25.0	U	25.0	ug/sample						
4,6-Dinitro-2-methylphenol	25.0	U	25.0	ug/sample						
4-Bromophenyl Phenyl Ether	10.0	U	10.0	ug/sample						
4-Chloro-3-methylphenol	10.0	U	10.0	ug/sample						
4-Chloroaniline	25.0	U	25.0	ug/sample						
4-Chlorophenyl Phenyl Ether	10.0	U	10.0	ug/sample						
3- and/or 4-Methylphenol	10.0	U	10.0	ug/sample						
4-Nitroaniline	25.0	U	25.0	ug/sample						
4-Nitrophenol	25.0	U	25.0	ug/sample						
Acenaphthene	10.0	U	10.0	ug/sample						
Acenaphthylene	10.0	U	10.0	ug/sample						
Anthracene	10.0	U	10.0	ug/sample						
Benz[a]anthracene	10.0	U	10.0	ug/sample						
Benzo[a] pyrene	10.0	U	10.0	ug/sample						
Benzo[b] fluoranthene	10.0	U	10.0	ug/sample						
Benzo[g,h,i] perylene	10.0	U	10.0	ug/sample						
Benzo[k] fluoranthene	10.0	U	10.0	ug/sample						
Bis(2-chloroethoxy) methane	10.0	U	10.0	ug/sample						

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

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 L211128 - SW 3540C										
Blank (L211128-BLK1)				Prepared: 11/15/2012 Analyzed: 11/25/2012						
Bis(2-chloroethyl) ether	10.0	U	10.0	ug/sample						
Bis(2-chloroisopropyl) ether	10.0	U	10.0	ug/sample						
Bis(2-ethylhexyl) phthalate	10.0	U	10.0	ug/sample						
Butyl Benzyl Phthalate	10.0	U	10.0	ug/sample						
Carbazole	10.0	U	10.0	ug/sample						
Chrysene	10.0	U	10.0	ug/sample						
Dibenz[a,h]anthracene	10.0	U	10.0	ug/sample						
Dibenzofuran	10.0	U	10.0	ug/sample						
Diethyl Phthalate	10.0	U	10.0	ug/sample						
Dimethyl Phthalate	10.0	U	10.0	ug/sample						
Di-n-butyl Phthalate	10.0	U	10.0	ug/sample						
Di-n-octyl Phthalate	10.0	U	10.0	ug/sample						
Fluoranthene	10.0	U	10.0	ug/sample						
Fluorene	10.0	U	10.0	ug/sample						
Hexachlorobenzene	10.0	U	10.0	ug/sample						
Hexachlorobutadiene	10.0	U	10.0	ug/sample						
Hexachlorocyclopentadiene	10.0	U	10.0	ug/sample						
Hexachloroethane	10.0	U	10.0	ug/sample						
Indeno[1,2,3-cd]pyrene	10.0	U	10.0	ug/sample						
Isophorone	10.0	U	10.0	ug/sample						
Naphthalene	10.0	U	10.0	ug/sample						
Nitrobenzene	10.0	U	10.0	ug/sample						
N-Nitrosodi-n-propylamine	10.0	U	10.0	ug/sample						
N-Nitrosodiphenylamine	10.0	U	10.0	ug/sample						
Pentachlorophenol	25.0	U	25.0	ug/sample						
Phenanthrene	10.0	U	10.0	ug/sample						
Phenol	10.0	U	10.0	ug/sample						
Pyrene	10.0	U	10.0	ug/sample						
Surrogate: 2-Fluorophenol	*60.6*			*ug/sample*	*75.000*		*81*	*21-100*		
Surrogate: Phenol-d5	*62.8*			*ug/sample*	*75.000*		*84*	*10-94*		
Surrogate: Nitrobenzene-d5	*42.0*			*ug/sample*	*50.000*		*84*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*44.7*			*ug/sample*	*50.000*		*89*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*45.0*			*ug/sample*	*75.000*		*60*	*10-123*		
Surrogate: p-Terphenyl-d14	*49.4*			*ug/sample*	*50.000*		*99*	*33-141*		

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

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 L211128 - SW 3540C									
LCS (L211128-BS1)			Prepared: 11/15/2012 Analyzed: 11/25/2012						
1,2,4-Trichlorobenzene	43.4		ug/sample	60.000		72	35-105		
1,2-Dichlorobenzene	45.0		ug/sample	60.000		75	35-100		
1,3-Dichlorobenzene	42.9		ug/sample	60.000		71	30-100		
1,4-Dichlorobenzene	43.7		ug/sample	60.000		73	30-100		
2,4,5-Trichlorophenol	55.7		ug/sample	60.000		93	45-125		
2,4,6-Trichlorophenol	52.1		ug/sample	60.000		87	40-125		
2,4-Dichlorophenol	49.4		ug/sample	60.000		82	40-120		
2,4-Dimethylphenol	49.0		ug/sample	60.000		82	30-110		
2,4-Dinitrophenol	8.91		ug/sample	60.000		15	15-140		
2,4-Dinitrotoluene	62.2		ug/sample	60.000		104	50-120		
2,6-Dinitrotoluene	58.1		ug/sample	60.000		97	50-115		
2-Chloronaphthalene	48.7		ug/sample	60.000		81	40-110		
2-Chlorophenol	47.2		ug/sample	60.000		79	35-115		
2-Methylnaphthalene	46.2		ug/sample	60.000		77	35-105		
2-Methylphenol	49.3		ug/sample	60.000		82	40-110		
2-Nitroaniline	62.0		ug/sample	60.000		103	35-110		
2-Nitrophenol	47.3		ug/sample	60.000		79	30-115		
3,3'-Dichlorobenzidine	21.7		ug/sample	60.000		36	20-150		
3-Nitroaniline	37.6		ug/sample	60.000		63	5-120		
4,6-Dinitro-2-methylphenol	19.8		ug/sample	60.000		33*	40-130		
4-Bromophenyl Phenyl Ether	50.9		ug/sample	60.000		85	50-110		
4-Chloro-3-methylphenol	55.5		ug/sample	60.000		92	40-110		
4-Chloroaniline	20.2		ug/sample	60.000		34	10-120		
4-Chlorophenyl Phenyl Ether	52.1		ug/sample	60.000		87	40-120		
3- and/or 4-Methylphenol	51.1		ug/sample	60.000		85	30-110		
4-Nitroaniline	55.9		ug/sample	60.000		93	5-110		
4-Nitrophenol	61.3		ug/sample	60.000		102	5-150		
Acenaphthene	51.6		ug/sample	60.000		86	35-110		
Acenaphthylene	53.9		ug/sample	60.000		90	30-110		
Anthracene	53.1		ug/sample	60.000		88	40-120		
Benz[a]anthracene	57.0		ug/sample	60.000		95	40-120		
Benzo[a] pyrene	57.1		ug/sample	60.000		95	40-140		
Benzo[b] fluoranthene	58.0		ug/sample	60.000		97	40-140		
Benzo[g,h,i] perylene	59.3		ug/sample	60.000		99	40-140		
Benzo[k] fluoranthene	58.6		ug/sample	60.000		98	40-140		
Bis(2-chloroethoxy) methane	47.0		ug/sample	60.000		78	30-115		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

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 L211128 - SW 3540C									
LCS (L211128-BS1)			Prepared: 11/15/2012 Analyzed: 11/25/2012						
Bis(2-chloroethyl) ether	44.4		ug/sample	60.000		74	35-110		
Bis(2-chloroisopropyl) ether	47.0		ug/sample	60.000		78	30-125		
Bis(2-ethylhexyl) phthalate	61.6		ug/sample	60.000		103	40-150		
Butyl Benzyl Phthalate	59.8		ug/sample	60.000		100	40-140		
Carbazole	57.5		ug/sample	60.000		96	20-120		
Chrysene	58.1		ug/sample	60.000		97	45-130		
Dibenz[a,h]anthracene	58.9		ug/sample	60.000		98	35-150		
Dibenzofuran	53.3		ug/sample	60.000		89	50-115		
Diethyl Phthalate	54.0		ug/sample	60.000		90	40-130		
Dimethyl Phthalate	52.3		ug/sample	60.000		87	40-130		
Di-n-butyl Phthalate	54.5		ug/sample	60.000		91	40-130		
Di-n-octyl Phthalate	65.8		ug/sample	60.000		110	35-155		
Fluoranthene	54.5		ug/sample	60.000		91	45-130		
Fluorene	53.4		ug/sample	60.000		89	50-120		
Hexachlorobenzene	51.0		ug/sample	60.000		85	50-110		
Hexachlorobutadiene	46.1		ug/sample	60.000		77	30-100		
Hexachlorocyclopentadiene	37.6		ug/sample	60.000		63	10-100		
Hexachloroethane	43.1		ug/sample	60.000		72	25-100		
Indeno[1,2,3-cd]pyrene	58.6		ug/sample	60.000		98	50-140		
Isophorone	45.7		ug/sample	60.000		76	40-110		
Naphthalene	49.9		ug/sample	60.000		83	35-100		
Nitrobenzene	44.6		ug/sample	60.000		74	40-110		
N-Nitrosodi-n-propylamine	50.7		ug/sample	60.000		84	30-120		
N-Nitrosodiphenylamine	53.3		ug/sample	60.000		89	25-110		
Pentachlorophenol	48.4		ug/sample	60.000		81	20-130		
Phenanthrene	53.9		ug/sample	60.000		90	50-120		
Phenol	47.1		ug/sample	60.000		78	30-110		
Pyrene	54.9		ug/sample	60.000		91	50-130		
Surrogate: 2-Fluorophenol	*57.5*		*ug/sample*	*75.000*		*77*	*21-100*		
Surrogate: Phenol-d5	*59.2*		*ug/sample*	*75.000*		*79*	*10-94*		
Surrogate: Nitrobenzene-d5	*39.3*		*ug/sample*	*50.000*		*79*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*42.6*		*ug/sample*	*50.000*		*85*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*64.9*		*ug/sample*	*75.000*		*87*	*10-123*		
Surrogate: p-Terphenyl-d14	*43.1*		*ug/sample*	*50.000*		*86*	*33-141*		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

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 L211128 - SW 3540C									
LCS Dup (L211128-BSD1)			Prepared: 11/15/2012 Analyzed: 11/25/2012						
1,2,4-Trichlorobenzene	49.8		ug/sample	60.000		83	35-105	14	20
1,2-Dichlorobenzene	50.9		ug/sample	60.000		85	35-100	12	20
1,3-Dichlorobenzene	49.1		ug/sample	60.000		82	30-100	14	20
1,4-Dichlorobenzene	49.6		ug/sample	60.000		83	30-100	13	20
2,4,5-Trichlorophenol	62.6		ug/sample	60.000		104	45-125	12	20
2,4,6-Trichlorophenol	57.8		ug/sample	60.000		96	40-125	11	20
2,4-Dichlorophenol	55.2		ug/sample	60.000		92	40-120	11	20
2,4-Dimethylphenol	53.7		ug/sample	60.000		89	30-110	9	20
2,4-Dinitrophenol	9.12		ug/sample	60.000		15	15-140	2	20
2,4-Dinitrotoluene	69.4		ug/sample	60.000		116	50-120	11	20
2,6-Dinitrotoluene	63.6		ug/sample	60.000		106	50-115	9	20
2-Chloronaphthalene	55.3		ug/sample	60.000		92	40-110	13	20
2-Chlorophenol	53.1		ug/sample	60.000		88	35-115	12	20
2-Methylnaphthalene	52.1		ug/sample	60.000		87	35-105	12	20
2-Methylphenol	54.3		ug/sample	60.000		91	40-110	10	20
2-Nitroaniline	68.4		ug/sample	60.000		114*	35-110	10	20
2-Nitrophenol	55.0		ug/sample	60.000		92	30-115	15	20
3,3'-Dichlorobenzidine	53.3		ug/sample	60.000		89	20-150	84*	20
3-Nitroaniline	56.3		ug/sample	60.000		94	5-120	40*	20
4,6-Dinitro-2-methylphenol	21.2		ug/sample	60.000		35*	40-130	7	20
4-Bromophenyl Phenyl Ether	59.2		ug/sample	60.000		99	50-110	15	20
4-Chloro-3-methylphenol	61.3		ug/sample	60.000		102	40-110	10	20
4-Chloroaniline	39.6		ug/sample	60.000		66	10-120	65*	20
4-Chlorophenyl Phenyl Ether	57.3		ug/sample	60.000		96	40-120	10	20
3- and/or 4-Methylphenol	55.9		ug/sample	60.000		93	30-110	9	20
4-Nitroaniline	67.4		ug/sample	60.000		112*	5-110	19	20
4-Nitrophenol	69.7		ug/sample	60.000		116	5-150	13	20
Acenaphthene	56.6		ug/sample	60.000		94	35-110	9	20
Acenaphthylene	58.6		ug/sample	60.000		98	30-110	8	20
Anthracene	61.1		ug/sample	60.000		102	40-120	14	20
Benz[a]anthracene	67.1		ug/sample	60.000		112	40-120	16	20
Benzo[a] pyrene	67.3		ug/sample	60.000		112	40-140	16	20
Benzo[b] fluoranthene	68.7		ug/sample	60.000		115	40-140	17	20
Benzo[g,h,i] perylene	69.7		ug/sample	60.000		116	40-140	16	20
Benzo[k] fluoranthene	66.2		ug/sample	60.000		110	40-140	12	20
Bis(2-chloroethoxy) methane	52.7		ug/sample	60.000		88	30-115	11	20

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/06/2012 15:07

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 L211128 - SW 3540C									
LCS Dup (L211128-BSD1)			Prepared: 11/15/2012 Analyzed: 11/25/2012						
Bis(2-chloroethyl) ether	49.8		ug/sample	60.000		83	35-110	11	20
Bis(2-chloroisopropyl) ether	53.3		ug/sample	60.000		89	30-125	13	20
Bis(2-ethylhexyl) phthalate	74.4		ug/sample	60.000		124	40-150	19	20
Butyl Benzyl Phthalate	69.1		ug/sample	60.000		115	40-140	15	20
Carbazole	64.0		ug/sample	60.000		107	20-120	11	20
Chrysene	68.1		ug/sample	60.000		113	45-130	16	20
Dibenz[a,h]anthracene	69.0		ug/sample	60.000		115	35-150	16	20
Dibenzofuran	59.0		ug/sample	60.000		98	50-115	10	20
Diethyl Phthalate	59.9		ug/sample	60.000		100	40-130	10	20
Dimethyl Phthalate	56.9		ug/sample	60.000		95	40-130	8	20
Di-n-butyl Phthalate	62.8		ug/sample	60.000		105	40-130	14	20
Di-n-octyl Phthalate	77.7		ug/sample	60.000		130	35-155	17	20
Fluoranthene	64.0		ug/sample	60.000		107	45-130	16	20
Fluorene	57.6		ug/sample	60.000		96	50-120	8	20
Hexachlorobenzene	59.6		ug/sample	60.000		99	50-110	16	20
Hexachlorobutadiene	54.4		ug/sample	60.000		91	30-100	17	20
Hexachlorocyclopentadiene	46.1		ug/sample	60.000		77	10-100	21*	20
Hexachloroethane	49.7		ug/sample	60.000		83	25-100	14	20
Indeno[1,2,3-cd]pyrene	69.1		ug/sample	60.000		115	50-140	17	20
Isophorone	51.7		ug/sample	60.000		86	40-110	12	20
Naphthalene	56.8		ug/sample	60.000		95	35-100	13	20
Nitrobenzene	51.4		ug/sample	60.000		86	40-110	14	20
N-Nitrosodi-n-propylamine	56.7		ug/sample	60.000		95	30-120	11	20
N-Nitrosodiphenylamine	60.9		ug/sample	60.000		101	25-110	13	20
Pentachlorophenol	57.6		ug/sample	60.000		96	20-130	17	20
Phenanthrene	60.8		ug/sample	60.000		101	50-120	12	20
Phenol	52.0		ug/sample	60.000		87	30-110	10	20
Pyrene	62.0		ug/sample	60.000		103	50-130	12	20
Surrogate: 2-Fluorophenol	*62.7*		*ug/sample*	*75.000*		*84*	*21-100*		
Surrogate: Phenol-d5	*62.9*		*ug/sample*	*75.000*		*84*	*10-94*		
Surrogate: Nitrobenzene-d5	*44.2*		*ug/sample*	*50.000*		*88*	*35-114*		
Surrogate: 2-Fluorobiphenyl	*46.3*		*ug/sample*	*50.000*		*93*	*43-116*		
Surrogate: 2,4,6-Tribromophenol	*72.6*		*ug/sample*	*75.000*		*97*	*10-123*		
Surrogate: p-Terphenyl-d14	*47.7*		*ug/sample*	*50.000*		*95*	*33-141*		

PREPARATION BENCH SHEET

L211128

Lionville Laboratory

Printed: 11/28/2012 1:21:18PM

00000028

Matrix: Wipe **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1201164**

Lab Number	Analysis	Prepared	Initial (Wipe)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211045-01	8270C TCL SVOC	11/15/2012 16:12	1	1				500	WC-Hanford, Inc.	
1211045-01RE1	8270C TCL SVOC	11/15/2012 16:12	1	1				500	WC-Hanford, Inc.	Added 11/28/2012 by S_S
L211128-BLK1	QC	11/15/2012 16:12	1	1				500		
L211128-BS1	QC	11/15/2012 16:12	1	1	1201082		600	500		
L211128-BSD1	QC	11/15/2012 16:12	1	1	1201082		600	500		

add RE-1

Extracts Relinquished By Date

M 11/28/12

Extracts Received By Date

PREPARATION BENCH SHEET

L211128

Lionville Laboratory

Printed: 11/16/2012 11:57:53AM

00000029

Matrix: Wipe **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1201164**

Lab Number	Analysis	Prepared	Initial (Wipe)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211045-01	8270C TCL SVOC	11/15/2012 16:12	1	1				500	WC-Hanford, Inc.	
L211128-BLK1	QC	11/15/2012 16:12	1	1				500		
L211128-BS1	QC	11/15/2012 16:12	1	1	1201082		600	500		
L211128-BSD1	QC	11/15/2012 16:12	1	1	1201082		600	500		

11/16/12 1205
Extracts Relinquished By Date

11/16/12 1210
Extracts Received By Date

PAHs

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/10/2012 13:14

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5D9	1211045-01	Other Solid	11/07/2012 11:15	11/14/2012 10:10

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Exton, Pennsylvania 19341
Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-150 K4026
LVL #: 1211045

W.O. #: 60049-001-001-0001-00
Date Received: 11-14-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) other solid sample was collected on 11-07-2012.

The sample and associated QC samples were extracted 11-15-2012 and analyzed 11-28,29-2012 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. All obtainable surrogate recoveries were within QC acceptance criteria.

4. The method blank contained Fluorene at a level above the reporting limit. Fluorene was detected in the sample processed with this blank at levels above the reporting limit. A copy of the Sample Discrepancy (SDR # 12GC206) has been enclosed.

5. All blank spike recoveries were within QC acceptance criteria.

6. Due to insufficient sample volume matrix QC was not performed. However, blank spike QC was performed with these samples to demonstrate that systems were in control.

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

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

9. 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

12/17/12
Date

r:\group\data\2012\pah 8310\wc hanford\1211045rgc.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC206

Initiator: Catherine Carey
Date: 12/04/12
Client: WC Hanford

Batch: 1211045
Samples: Blank
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: WIPE
Prep Batch: L211127

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)

Blank has a hit for Fluorene

2. Known or Probable Causes(s)

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:
Fluorene in blank is well below client required detection limit
Narrate JD.
12/17/12

4. Project Manager Instructions...signature/date: 12/17/12
__ 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: 12/17/12
__ 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

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.

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Phone: 610-280-3000
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/10/2012 13:14

J1R5D9

1211045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**0.0910**	J	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Acenaphthylene	**0.640**		0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Acenaphthene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Fluorene	**0.619**		0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Phenanthrene	**0.586**		0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Anthracene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Fluoranthene	**0.140**		0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Indeno[1,2,3-cd]pyrene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Pyrene	**0.0315**	J	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Benz[a]anthracene	**0.0255**	J	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Chrysene	**0.0385**	J	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Benzo[b] fluoranthene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Benzo[k] fluoranthene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Benzo[a] pyrene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Dibenz[a,h]anthracene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Benzo[g,h,i] perylene	0.100	U	0.100	ug/sample	1	L211127	11/15/2012	11/29/2012	8310
Surrogate: Triphenylene	*81 %*		*68-129*			*L211127*	*11/15/2012*	*11/29/2012*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/10/2012 13:14

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 L211127 - SW 3540C										
Blank (L211127-BLK1)				Prepared: 11/15/2012 Analyzed: 11/28/2012						
Naphthalene	0.100	U	0.100	ug/sample						
Acenaphthylene	0.100	U	0.100	ug/sample						
Acenaphthene	0.100	U	0.100	ug/sample						
Fluorene	0.144		0.100	ug/sample						
Phenanthrene	0.100	U	0.100	ug/sample						
Anthracene	0.100	U	0.100	ug/sample						
Fluoranthene	0.100	U	0.100	ug/sample						
Indeno[1,2,3-cd]pyrene	0.100	U	0.100	ug/sample						
Pyrene	0.100	U	0.100	ug/sample						
Benz[a]anthracene	0.100	U	0.100	ug/sample						
Chrysene	0.100	U	0.100	ug/sample						
Benzo[b] fluoranthene	0.100	U	0.100	ug/sample						
Benzo[k] fluoranthene	0.100	U	0.100	ug/sample						
Benzo[a] pyrene	0.100	U	0.100	ug/sample						
Dibenz[a,h]anthracene	0.100	U	0.100	ug/sample						
Benzo[g,h,i] perylene	0.100	U	0.100	ug/sample						
Surrogate: Triphenylene	*4.64*			*ug/sample*	*5.0000*		*93*	*68-129*		
LCS (L211127-BS1)				Prepared: 11/15/2012 Analyzed: 11/28/2012						
Naphthalene	3.81		0.100	ug/sample	5.0000		76	0-127		
Acenaphthylene	4.15		0.100	ug/sample	5.0000		83	50-140		
Acenaphthene	4.05		0.100	ug/sample	5.0000		81	17-139		
Fluorene	4.14		0.100	ug/sample	5.0000		83	28-145		
Phenanthrene	4.06		0.100	ug/sample	5.0000		81	30-152		
Anthracene	4.17		0.100	ug/sample	5.0000		83	19-171		
Fluoranthene	4.32		0.100	ug/sample	5.0000		86	34-159		
Indeno[1,2,3-cd]pyrene	4.41		0.100	ug/sample	5.0000		88	31-156		
Pyrene	4.29		0.100	ug/sample	5.0000		86	33-152		
Benz[a]anthracene	4.65		0.100	ug/sample	5.0000		93	32-157		
Chrysene	4.35		0.100	ug/sample	5.0000		87	31-159		
Benzo[b] fluoranthene	4.79		0.100	ug/sample	5.0000		96	33-164		
Benzo[k] fluoranthene	4.64		0.100	ug/sample	5.0000		93	28-161		
Benzo[a] pyrene	4.57		0.100	ug/sample	5.0000		91	29-149		
Dibenz[a,h]anthracene	4.72		0.100	ug/sample	5.0000		94	27-153		
Benzo[g,h,i] perylene	4.77		0.100	ug/sample	5.0000		95	32-157		
Surrogate: Triphenylene	*4.34*			*ug/sample*	*5.0000*		*87*	*68-129*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/10/2012 13:14

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 L211127 - SW 3540C									
LCS Dup (L211127-BSD1)			Prepared: 11/15/2012 Analyzed: 11/28/2012						
Naphthalene	4.03	0.100	ug/sample	5.0000		81	0-127	6	30
Acenaphthylene	4.32	0.100	ug/sample	5.0000		86	50-140	4	30
Acenaphthene	4.31	0.100	ug/sample	5.0000		86	17-139	6	30
Fluorene	4.36	0.100	ug/sample	5.0000		87	28-145	5	30
Phenanthrene	4.34	0.100	ug/sample	5.0000		87	30-152	7	30
Anthracene	4.45	0.100	ug/sample	5.0000		89	19-171	7	30
Fluoranthene	4.56	0.100	ug/sample	5.0000		91	34-159	6	30
Indeno[1,2,3-cd]pyrene	4.54	0.100	ug/sample	5.0000		91	31-156	3	30
Pyrene	4.44	0.100	ug/sample	5.0000		89	33-152	3	30
Benz[a]anthracene	4.84	0.100	ug/sample	5.0000		97	32-157	4	30
Chrysene	4.42	0.100	ug/sample	5.0000		88	31-159	2	30
Benzo[b] fluoranthene	4.78	0.100	ug/sample	5.0000		96	33-164	0.1	30
Benzo[k] fluoranthene	4.69	0.100	ug/sample	5.0000		94	28-161	1	30
Benzo[a] pyrene	4.66	0.100	ug/sample	5.0000		93	29-149	2	30
Dibenz[a,h]anthracene	4.76	0.100	ug/sample	5.0000		95	27-153	0.8	30
Benzo[g,h,i] perylene	4.84	0.100	ug/sample	5.0000		97	32-157	1	30
Surrogate: Triphenylene	*5.17*		*ug/sample*	*5.0000*		*103*	*68-129*		

PREPARATION BENCH SHEET

L211127

Lionville Laboratory

Printed: 11/16/2012 11:57:40AM

00000038

Matrix: Wipe

Prepared using: HPLC - SW 3540/3550

Surrogate used: 1200612

Lab Number	Analysis	Prepared	Initial (Wipe)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211045-01	8310 PAH	11/15/2012 16:12	1	5				50	WC-Hanford, Inc.	
L211127-BLK1	QC	11/15/2012 16:12	1	5				50		
L211127-BS1	QC	11/15/2012 16:12	1	5	1200963		50	50		
L211127-BSD1	QC	11/15/2012 16:12	1	5	1200963		50	50		

Extracts Relinquished By 11/16/12 1205 Date

Extracts Received By 11/16/12 12:05 Date

METALS

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/12/2012 11:32

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R5D9	1211045-01	Other Solid	11/07/2012 11:15	11/14/2012 10:10

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-150
LVL#: 1211045
SDG/SAF#: K4026/RC-150

W.O.#: 60049-001-001-0001-00
Date Received: 11-14-12

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 analysis of 1 other solid (wipe) sample.

2. The sample was prepared and analyzed in accordance with methods listed on the data report forms. The sample was reported on a wet weight, 'as-received' basis.

   Each sample was divided into two, approximately equal, parts. One part was digested for ICP metals analyses and the other part was digested for Mercury analysis. A duplicate and a matrix spike were performed for each analysis. The initial weight for each digestate was a sixth of the original wipe.

   The sample was analyzed and reported with a 20-fold dilution for mercury due to high concentration of Mercury in the sample.

3. All analyses were performed within the required holding times with the exception of Mercury. Please refer to SDR# 12MR025A

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 (less than the LOQ).

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, sample results were 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 laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon (28.9%).

10. The matrix spike (MS) recoveries for 6 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 serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration levels for the following analytes: Aluminum, Chromium, Copper, Iron, Mercury, and Silicon.

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1R5D9	Mercury	1.0	112.0

12. The duplicate analyses for 7 analytes were 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 sample results for Cadmium, Molybdenum, Potassium, and Vanadium were less than ten times the MDL.

13. 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.

14. 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.

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 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

12/17/12
Date

alm/01-057

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MR025A

Initiator: Mdelil
Date: 12/12/12
Client: WC Hanford

Batch: 1211045
Samples: 01
Method: SW846/MCAWW/CLP/

Parameter: Hg
Matrix: wipe
Prep Batch: 1212008

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*
X 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)
Hg hold time up on 12/5/12. Initial analysis on 12/5/12, results were over-calibration range, followed by instrument out of commission. Instrument returned to service on 12/10/12, sample analyzed with dilution, 5 days past hold.

2. Known or Probable Causes(s)
Sample following this one ultimately was found to contain very high level of Hg, causing the down time.

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:
propose narrative coverage

12/17/12

4. Project Manager Instructions...signature/date: _____
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
__ Date/Person _____
__ Add
__ Cancel

12/17/12

5. Final Action...signature/date: _____
__ 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
X Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

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

QA-139-A-0208

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/12/2012 11:32

Notes and Definitions

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

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/12/2012 11:32

J1R5D9
1211045-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**1380**		120	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Antimony	**3.10**	B	6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Arsenic	6.00	U	6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Barium	**40.2**		3.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Beryllium	1.20	U	1.20	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Boron	**49.9**		12.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Cadmium	**0.483**	B	1.50	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Calcium	**1280**		120	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Chromium	**221**		6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Cobalt	18.0	U	18.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Copper	**529**		12.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Iron	**5420**		120	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Lead	**29.8**		6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Lithium	**3.19**	B	12.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Magnesium	**983**		30.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Manganese	**67.9**		6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Molybdenum	**7.94**		6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Nickel	**152**		15.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Potassium	**304**	B	600	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Selenium	6.00	U	6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Silicon	**623**		36.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Silver	6.00	U	6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Sodium	**440**		300	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Thallium	6.00	U	6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Uranium	60.0	U	60.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Vanadium	**7.89**		6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Zinc	**171**		18.0	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Zirconium	**33.7**		6.00	ug/sample	1	L212007	12/04/2012	12/05/2012	6010B
Mercury	**10.4**		1.20	ug/sample	20	L212008	12/04/2012	12/10/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/12/2012 11:32

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 L212007 - SW 3050B										
Blank (L212007-BLK1)				Prepared: 12/04/2012 Analyzed: 12/05/2012						
Aluminum	20.0	U	20.0	ug/sample						
Antimony	1.00	U	1.00	ug/sample						
Arsenic	1.00	U	1.00	ug/sample						
Barium	0.500	U	0.500	ug/sample						
Beryllium	0.200	U	0.200	ug/sample						
Boron	2.00	U	2.00	ug/sample						
Cadmium	0.250	U	0.250	ug/sample						
Calcium	20.0	U	20.0	ug/sample						
Chromium	1.00	U	1.00	ug/sample						
Cobalt	3.00	U	3.00	ug/sample						
Copper	2.00	U	2.00	ug/sample						
Iron	20.0	U	20.0	ug/sample						
Lead	1.00	U	1.00	ug/sample						
Lithium	2.00	U	2.00	ug/sample						
Magnesium	5.00	U	5.00	ug/sample						
Manganese	1.00	U	1.00	ug/sample						
Molybdenum	1.00	U	1.00	ug/sample						
Nickel	2.50	U	2.50	ug/sample						
Potassium	100	U	100	ug/sample						
Selenium	1.00	U	1.00	ug/sample						
Silicon	6.00	U	6.00	ug/sample						
Silver	1.00	U	1.00	ug/sample						
Sodium	50.0	U	50.0	ug/sample						
Thallium	1.00	U	1.00	ug/sample						
Uranium	10.0	U	10.0	ug/sample						
Vanadium	1.00	U	1.00	ug/sample						
Zinc	3.00	U	3.00	ug/sample						
Zirconium	1.00	U	1.00	ug/sample						

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-150 Project Number: K4026 Project Manager: Joan Kessner	**Reported:** 12/12/2012 11:32

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 L212007 - SW 3050B									
LCS (L212007-BS1)			Prepared: 12/04/2012 Analyzed: 12/05/2012						
Aluminum	242	20.0	ug/sample	250.00		97	80-120		
Antimony	149	1.00	ug/sample	150.00		99	80-120		
Arsenic	484	1.00	ug/sample	500.00		97	80-120		
Barium	252	0.500	ug/sample	250.00		101	80-120		
Beryllium	12.3	0.200	ug/sample	12.500		98	80-120		
Boron	238	2.00	ug/sample	250.00		95	80-120		
Cadmium	10.9	0.250	ug/sample	12.500		87	80-120		
Calcium	1250	20.0	ug/sample	1250.0		100	80-120		
Chromium	25.3	1.00	ug/sample	25.000		101	80-120		
Cobalt	124	3.00	ug/sample	125.00		100	80-120		
Copper	61.8	2.00	ug/sample	62.500		99	80-120		
Iron	252	20.0	ug/sample	250.00		101	80-120		
Lead	121	1.00	ug/sample	125.00		97	80-120		
Lithium	255	2.00	ug/sample	250.00		102	80-120		
Magnesium	1240	5.00	ug/sample	1250.0		99	80-120		
Manganese	37.5	1.00	ug/sample	37.500		100	80-120		
Molybdenum	258	1.00	ug/sample	250.00		103	80-120		
Nickel	99.1	2.50	ug/sample	100.00		99	80-120		
Potassium	1230	100	ug/sample	1250.0		99	80-120		
Selenium	470	1.00	ug/sample	500.00		94	80-120		
Silicon	72.4	6.00	ug/sample	250.00		29*	80-120		
Silver	24.6	1.00	ug/sample	25.000		98	80-120		
Sodium	1230	50.0	ug/sample	1250.0		98	80-120		
Thallium	483	1.00	ug/sample	500.00		97	80-120		
Uranium	243	10.0	ug/sample	250.00		97	80-120		
Vanadium	126	1.00	ug/sample	125.00		101	80-120		
Zinc	50.0	3.00	ug/sample	50.000		100	80-120		
Zirconium	254	1.00	ug/sample	250.00		102	80-120		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/12/2012 11:32

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 L212007 - SW 3050B										
Duplicate (L212007-DUP1)		**Source: 1211045-01**		Prepared: 12/04/2012 Analyzed: 12/05/2012						
Aluminum	966		120	ug/sample		1380			35*	20
Antimony	3.36	B	6.00	ug/sample		3.10			8	20
Arsenic	6.00	U	6.00	ug/sample		6.00 U				20
Barium	28.4		3.00	ug/sample		40.2			34*	20
Beryllium	1.20	U	1.20	ug/sample		1.20 U				20
Boron	49.4		12.0	ug/sample		49.9			1	20
Cadmium	0.367	B	1.50	ug/sample		0.483			27*	20
Calcium	1060		120	ug/sample		1280			19	20
Chromium	196		6.00	ug/sample		221			12	20
Cobalt	18.0	U	18.0	ug/sample		18.0 U				20
Copper	511		12.0	ug/sample		529			4	20
Iron	3830		120	ug/sample		5420			35*	20
Lead	32.5		6.00	ug/sample		29.8			9	20
Lithium	12.0	U	12.0	ug/sample		3.19				20
Magnesium	742		30.0	ug/sample		983			28*	20
Manganese	49.3		6.00	ug/sample		67.9			32*	20
Molybdenum	6.43		6.00	ug/sample		7.94			21*	20
Nickel	134		15.0	ug/sample		152			12	20
Potassium	225	B	600	ug/sample		304			30*	20
Selenium	6.00	U	6.00	ug/sample		6.00 U				20
Silicon	519		36.0	ug/sample		623			18	20
Silver	6.00	U	6.00	ug/sample		6.00 U				20
Sodium	419		300	ug/sample		440			5	20
Thallium	6.00	U	6.00	ug/sample		6.00 U				20
Uranium	60.0	U	60.0	ug/sample		60.0 U				20
Vanadium	5.57	B	6.00	ug/sample		7.89			34*	20
Zinc	147		18.0	ug/sample		171			15	20
Zirconium	14.4		6.00	ug/sample		33.7			80*	20

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/12/2012 11:32

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 L212007 - SW 3050B									
Matrix Spike (L212007-MS1)		**Source: 1211045-01**	Prepared: 12/04/2012 Analyzed: 12/05/2012						
Aluminum	2880	120	ug/sample	600.00	1380	250*	75-125		
Antimony	146	6.00	ug/sample	150.00	3.10	95	75-125		
Arsenic	577	6.00	ug/sample	600.00	6.00 U	96	75-125		
Barium	639	3.00	ug/sample	600.00	40.2	100	75-125		
Beryllium	14.6	1.20	ug/sample	15.000	1.20 U	97	75-125		
Boron	358	12.0	ug/sample	300.00	49.9	103	75-125		
Cadmium	13.4	1.50	ug/sample	15.000	0.483	86	75-125		
Calcium	9240	120	ug/sample	7500.0	1280	106	75-125		
Chromium	345	6.00	ug/sample	60.000	221	207*	75-125		
Cobalt	150	18.0	ug/sample	150.00	18.0 U	100	75-125		
Copper	748	12.0	ug/sample	75.000	529	292*	75-125		
Iron	6660	120	ug/sample	300.00	5420	413*	75-125		
Lead	176	6.00	ug/sample	150.00	29.8	98	75-125		
Lithium	299	12.0	ug/sample	300.00	3.19	99	75-125		
Magnesium	8520	30.0	ug/sample	7500.0	983	100	75-125		
Manganese	232	6.00	ug/sample	150.00	67.9	109	75-125		
Molybdenum	312	6.00	ug/sample	300.00	7.94	101	75-125		
Nickel	336	15.0	ug/sample	150.00	152	123	75-125		
Potassium	7660	600	ug/sample	7500.0	304	98	75-125		
Selenium	578	6.00	ug/sample	600.00	6.00 U	96	75-125		
Silicon	1490	36.0	ug/sample	300.00	623	288*	75-125		
Silver	14.8	6.00	ug/sample	15.000	6.00 U	99	75-125		
Sodium	7870	300	ug/sample	7500.0	440	99	75-125		
Thallium	571	6.00	ug/sample	600.00	6.00 U	95	75-125		
Uranium	1420	60.0	ug/sample	1500.0	60.0 U	95	75-125		
Vanadium	153	6.00	ug/sample	150.00	7.89	97	75-125		
Zinc	329	18.0	ug/sample	150.00	171	105	75-125		
Zirconium	1460	6.00	ug/sample	1500.0	33.7	95	75-125		

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WC-Hanford, Inc.	Project: RC-150	
2620 Fermi Avenue	Project Number: K4026	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/12/2012 11:32

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 L212007 - SW 3050B										
Post Spike (L212007-PS1)		**Source: 1211045-01**		Prepared: 12/04/2012 Analyzed: 12/05/2012						
Aluminum	6590			ug/L	2000.0	4600	99	75-125		
Chromium	1840			ug/L	1100.0	737	100	75-125		
Copper	2880			ug/L	1100.0	1760	102	75-125		
Iron	20000			ug/L	2000.0	18100	94	75-125		
Silicon	3340			ug/L	1100.0	2080	115	75-125		
Batch L212008 - SW 7471A Prep										
Blank (L212008-BLK1)				Prepared: 12/04/2012 Analyzed: 12/10/2012						
Mercury	0.0100	U	0.0100	ug/sample						
LCS (L212008-BS1)				Prepared: 12/04/2012 Analyzed: 12/10/2012						
Mercury	0.256		0.0100	ug/sample	0.25000		103	80-120		
Duplicate (L212008-DUP1)		**Source: 1211045-01**		Prepared: 12/04/2012 Analyzed: 12/10/2012						
Mercury	14.9		1.20	ug/sample		10.4			35.5*	20
Matrix Spike (L212008-MS1)		**Source: 1211045-01**		Prepared: 12/04/2012 Analyzed: 12/10/2012						
Mercury	13.1		1.20	ug/sample	0.30000	10.4	900*	75-125		

Lionville Laboratory Sample aliquots created evening of 12/3/12 **Logbook #:** 1194

SAMPLE DIGESTION RECORD

Digestion Batch #: L212007
Date/Time Initiated: 12/4/12 1150
Date/Time Completed: 12/4/12 1920
Analyst: MW
Matrix (circle): Soil Water Other wipe
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.

Digested / Undigested (circle one)
Balance #: (B14)
Balance Cal Verification: (Y) NA
Temp: 97°
BLOCK 1 2 (circle one)
(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
1211045-01		1/6 wipe	50		TO		wipe with dark gray-	RAS III	
L212007-DUP1		1/6 wipe	50		↓		brown particulate	↓	
MS1	0.5 *	1/6 wipe	50		↓		bits attached	↓	
1211096-01		1/6 wipe	50		↓		wipe with brown	RAS II	
L212007-DUP2		1/6 wipe	50		↓		stains	↓	
MS2	0.5 *	1/6 wipe	50		↓		↓	↓	
BLK1		N/A	50		✓		reagent blank		
BS1	0.5 *	N/A	50				reagent blank - spike		

MW 12/4/12

Spiking IDs / Expiration Date:
MS#: 1201581

LCS#: 1201583

Reagent IDs:
HNO_3 0000003390
HCl L13029
H_2O_2 L11A03
1:1 HNO_3 637-076-07
1:1 HCl

File ID#:

Data Review By/Date: 12/5/12

* also 0.25 ml each of: 1200380 (U-) and 1200386 (Zr)

R:\group\QA\SOP\Signed\SPI\Metals Digestion log.doc

~~120~~ 1211045 - each aliquot (1/6 wipe) weighs ~ 0.5 gm
1211096 - each aliquot (1/6 wipe) weighs ~ 0.7 gm

Page #: 1

Each wipe divided into 6 approximately equal portions, 3 each for ICP + Hg

PREPARATION BENCH SHEET

L212007

Lionville Laboratory

Printed: 12/4/2012 8:42:13PM

00000052

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

Lab Number	Analysis	Prepared	Initial (Wipe)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1211045-01	6010B HSL Metals	12/04/2012 11:50	0.1666667	50					WC-Hanford, Inc.	HSL + B, Li, Mo, Si, U, Zr (No TL)
1211096-01	6010B HSL Metals	12/04/2012 11:50	0.1666667	50					WC-Hanford, Inc.	HSL + B, Li, Mo, Si, U, Zr (No TL)
L212007-BLK1	QC	12/04/2012 11:50	1	50						no blank wipe used, reagent blank/blank spike only
L212007-BS1	QC	12/04/2012 11:50	1	50	1201583		500			no blank wipe used, reagent blank/blank spike only
L212007-DUP1	QC	12/04/2012 11:50	0.1666667	50		1211045-01				
L212007-DUP2	QC	12/04/2012 11:50	0.1666667	50		1211096-01				
L212007-MS1	QC	12/04/2012 11:50	0.1666667	50	1201581	1211045-01	500			
L212007-MS2	QC	12/04/2012 11:50	0.1666667	50	1201581	1211096-01	500			
L212007-PS1	QC	12/04/2012 11:50	0.1666667	50	1201582	1211045-01	100			
L212007-PS2	QC	12/04/2012 11:50	0.1666667	50	1201582	1211096-01	100			

Extracts Relinquished By — Date: 12/4/12

Extracts Received By — Date: 12/05/12

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 12/4/12
Start Time/Temp: 1938/94°
End Time/Temp: 2111/98°

Instrument ID: HG3.1/HG3.1/HG3.2
Balance # (NA)
Pipette Calibration (Daily) (Y)

Logbook # 1153
Prep Batch: L212008
Worksheet: HG120501/HG121001
SOP No. ME-HgCVAA HG121002
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	
L212008-BLK1				10 ml	50	
BS1		0.250	5.0	10 ml	50	
1211045-01				1/6 wipe	50	wipes were cut into
L212008-DUP1				1/6 wipe	50	small pieces and each
MS1		0.500	1.0	1/6 wipe	50	divided into 6 piles,
1211096-01				1/6 wipe	50	3 for ICP+QC, 3 for Hg
L212008-DUP2				1/6 wipe	50	and QC, for each wipe
MS2		0.500	1.0	1/6 wipe	50	pw 12/4/12

pw 12/4/12

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1201235	12/4/12 1400
ICV/CCV/LCS	(I.V. 1201411)	N/A

Reviewed By/Date: [illegible] 12/6/12

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
Soil LCS Spiking Concentration: 1.0 µg/ml