SAF-RC-029
Remaining Sites Confirmation Sampling – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 10/2/12
INITIAL/DATE

COMMENTS:

SDG K3921 SAF RC-029

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

INCLUDES ADD-ON CrVI AND PAH

Waste Site: 100-D-96 French Drain Soils

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

28 September 2012

RECEIVED
SEP 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 #	1206026
SDG #	K3921 ADDON
SAF #	RC-029
Date Received	06/06/12
# Samples	5
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	
Inorganics	X

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 26 pages.

CHAIN OF CUSTODY

REVISION

Lionville Laboratory Use Only: 1206026

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
A Division of Eberline Analytical Corporation

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: WC Hanford Subf# RC-029
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O. Johnson
QC: SW Del: Std. TAT: 15 Days
Date Rec'd: 6-12-12 Date Due: 6-27-12

Refrigerator #											A		B					
#/Type Container	Liquid										1		2		2			
	Solid										1AG		1AG					
Volume	Liquid																	
	Solid										125		125					
Preservatives											—		—					
ANALYSES REQUESTED →		ORGANIC									INORG							
		VOA	BNA	Pest/PCB	Herb						Metal Hg	CN	TC Anions					
Lionville Laboratory Use Only																		
											8310 PAH		METALS		METALS	Crb		

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	8310 PAH	METALS	METALS	Crb
01	J1PR48			Soil	6-7-12	1015		X		
02	49					0859	X	X	X	X
03	50					0902	X	X	X	X
04	51					1208	X	X	X	X
05	52					1212	X	X	X	X
06	53					1212	X	X	X	X

Special Instructions:
① Met = HSL + B, Mo, Si (no TL)

Special Instructions:
9/13/12 1. Crb and PAH analyses added 'out of hold' per client due 9/21/12
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	6/12/12	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-142	Page 1 of 2

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 100-D-96 French Drain Soils		SAF No.: RC-029
Ice Chest No.: RCC-07-007	Field Logbook No.: EL-1601-06	COA: C10D96A000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A110365		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	125mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									
Sample No. / Matrix * / Sample Date / Sample Time											
J1PR46 / SOIL / ~~6-7-12~~											
J1PR47 / SOIL											
J1PR48 / SOIL / 6/7/12 / 1015	X										
J1PR49 / SOIL / ↓ / 0859	X	X									
J1PR50 / SOIL / ↓ / 0902	X	X									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Quincy Stowe	Quincy Stowe	6/7/12 1300	WCH MSTankovich	6/7/12 1300
Relinquished By/Removed From: WCH MSTankovich	MSTankovich	6/7/12 1507	1060#1 A. Freier	6-7-12 1507
Relinquished By/Removed From: 1060#1 A. Freier	A. Freier WCH	6-11-12 0940	Fed Ex	
Relinquished By/Removed From: Fed Ex		6-12-12 0950	Received By/Stored In: VICTOR HERNANDEZ	6-12-12 0950
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2

REVIEWED BY CMB DATE 6-11-12

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-142	Page 2 of 2

Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 100-D-96 French Drain Soils		SAF No.: RC-029
Ice Chest No.: RCC-07-007	Field Logbook No.: EL-1601-06	COA: C10D96A000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A110365		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	125mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
J1PR51	SOIL	6/7/12	1208	X	X								
J1PR52	SOIL	↓	1212	X	X								
J1PR53	SOIL	↓	1212	X	X								
J1PR54	SOIL	A1 6-7-12											
J1PR55	SOIL												

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe [signature]	1300 6/7/12	WCH MSTankovich [signature]	1300 6/7/12
MSTankovich [signature]	WCH 1507 6/7/12	1060#1 A. Freier [signature]	1507 6-7-12
A. Freier [signature]	1060#1 WCH 0940 6-11-12	Fed Ex	
Fed Ex	6-12-12 0950	VICTOR HERNANDEZ	6-12-12 0950

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2

REVIEWED BY CMB DATE 6-11-12

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

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/SAF/SOW/Release #: RC-029

Date: 6/12/12

LvL Batch #: 1206026

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 793665263272
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 2-3° °C		Cooler # RCC-07-007
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	NO_2, NO_3, PO_4 received outside recommended hold time. JEB 6/12/12
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	see item #12. JEB 6/12/12
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

SR-002-B.doc

PAHs

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-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 09/20/2012 19:41

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PR49	1206026-02	Soil	06/07/2012 08:59	06/12/2012 09:50
J1PR50	1206026-03	Soil	06/07/2012 09:02	06/12/2012 09:50
J1PR51	1206026-04	Soil	06/07/2012 12:08	06/12/2012 09:50
J1PR52	1206026-05	Soil	06/07/2012 12:12	06/12/2012 09:50
J1PR53	1206026-06	Soil	06/07/2012 12:12	06/12/2012 09:50

LIONVILLE LABORATORY
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Case Narrative

Client: WC-HANFORD RC-029 K3921
LVL #: 1206026

W.O. #: 60049-001-001-0001-00
Date Received: 06-12-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Five (5) soil samples were collected on 06-07-2012.

The samples and associated QC samples were extracted 09-13-2012 and analyzed 09-18,19-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.
2. The samples were extracted outside of the recommended holding time. A copy of the Sample Discrepancy Report (SDR# 12PM001) has been enclosed.
3. These samples contain a lot of non-target peaks, and some positive interference may be present. In particular, Naphthalene and Acenaphthylene results should be treated with caution by the end user of the data due to possible positive interference.
4. All obtainable surrogate recoveries were within acceptance criteria.
5. The method blank was below the reporting limits for all target compounds.
6. All blank spike recoveries were within acceptance criteria.
7. One (1) of thirty-two (32) matrix spike recoveries was outside acceptance criteria. Acenaphthylene is biased high at 141% in the matrix spike duplicate.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. The samples were reported on a dry weight basis.
11. 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

9/27/12
Date

r:\group\data\2012\pah 8310\wc hanford\1206026oj.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 #: 12PAH001

Initiator: Q. Johnson
Date: 9/13/12
Client: WC-Hanford

Batch: 1206024, 1206026
Samples: All except 6026-01
Method: SW846/MCAWW/CLP/

Parameter: C16 PAH
Matrix: Soil
Prep Batch: —

1. Reason for SDR

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

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong X Received Past Hold – additional analyses request noticed
__ 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)

Samples analyzed outside of holding time

2. Known or Probable Causes(s)

client request received past holding time

3. Discussion and Proposed Action

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

Other Description:
1. Notify client of holdtime exceedance prior to performing additional analyses
2. Analyze, report and narrate

4. Project Manager Instructions...signature/date: [signature] 9/13/12

✓ Concur with Proposed Action 1 + 2
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person Jon Ressner 9/13/12
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 9/27/12

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 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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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 09/20/2012 19:41

J1PR49

1206026-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**237**	D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Acenaphthylene	**454**	D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Acenaphthene	35.2	U	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Fluorene	**17.1**	J, D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Phenanthrene	**199**	D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Anthracene	35.2	U	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Fluoranthene	**222**	D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Indeno[1,2,3-cd]pyrene	35.2	U	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Pyrene	**33.9**	J, D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benz[a]anthracene	**34.2**	J, D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Chrysene	**10.4**	J, D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[b] fluoranthene	**25.0**	J, D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[k] fluoranthene	35.2	U	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[a] pyrene	**61.6**	D	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Dibenz[a,h]anthracene	35.2	U	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[g,h,i] perylene	35.2	U	35.2	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Surrogate: Triphenylene	*105 %*		*68-129*			*L209084*	*09/13/2012*	*09/18/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/20/2012 19:41

J1PR50
1206026-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**25.6**	J, D	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Acenaphthylene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Acenaphthene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Fluorene	**20.0**	J, D	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Phenanthrene	**153**	D	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Anthracene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Fluoranthene	**34.3**	J, D	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Indeno[1,2,3-cd]pyrene	**16.4**	J, D	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Pyrene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benz[a]anthracene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Chrysene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[b] fluoranthene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[k] fluoranthene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[a] pyrene	**44.4**	D	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Dibenz[a,h]anthracene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[g,h,i] perylene	37.5	U	37.5	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Surrogate: Triphenylene	*89 %*		*68-129*			*L209084*	*09/13/2012*	*09/18/2012*	*8310*

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Phone: 610-280-3000
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	09/20/2012 19:41

J1PR51

1206026-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**861**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Acenaphthylene	**1300**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Acenaphthene	37.3	U	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Fluorene	**79.0**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Phenanthrene	**291**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Anthracene	37.3	U	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Fluoranthene	**665**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Indeno[1,2,3-cd]pyrene	**89.6**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Pyrene	**84.8**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benz[a]anthracene	**133**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Chrysene	**57.0**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[b] fluoranthene	**115**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[k] fluoranthene	**61.0**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[a] pyrene	**265**	D	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Dibenz[a,h]anthracene	37.3	U	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Benzo[g,h,i] perylene	37.3	U	37.3	ug/kg dry	10	L209084	09/13/2012	09/18/2012	8310
Surrogate: Triphenylene	*99 %*		*68-129*			*L209084*	*09/13/2012*	*09/18/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/20/2012 19:41

J1PR52
1206026-05 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**55.7**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Acenaphthylene	**89.4**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Acenaphthene	3.40	U	3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Fluorene	**5.01**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Phenanthrene	**11.1**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Anthracene	3.40	U	3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Fluoranthene	**40.8**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Indeno[1,2,3-cd]pyrene	**4.27**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Pyrene	**5.20**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benz[a]anthracene	**5.90**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Chrysene	**2.06**	J	3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[b] fluoranthene	**6.61**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[k] fluoranthene	3.40	U	3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[a] pyrene	**23.9**		3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Dibenz[a,h]anthracene	3.40	U	3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[g,h,i] perylene	3.40	U	3.40	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Surrogate: Triphenylene	*90 %*		*68-129*			*L209084*	*09/13/2012*	*09/18/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/20/2012 19:41

J1PR53
1206026-06 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**38.8**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Acenaphthylene	**81.3**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Acenaphthene	3.39	U	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Fluorene	**4.31**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Phenanthrene	**6.44**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Anthracene	3.39	U	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Fluoranthene	**38.5**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Indeno[1,2,3-cd]pyrene	**2.08**	J	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Pyrene	**3.19**	J	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benz[a]anthracene	**7.25**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Chrysene	**4.44**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[b] fluoranthene	**2.58**	J	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[k] fluoranthene	**4.58**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[a] pyrene	**15.5**		3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Dibenz[a,h]anthracene	3.39	U	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Benzo[g,h,i] perylene	3.39	U	3.39	ug/kg dry	1	L209084	09/13/2012	09/18/2012	8310
Surrogate: Triphenylene	*99 %*		*68-129*			*L209084*	*09/13/2012*	*09/18/2012*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	Reported: 09/20/2012 19:41

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 L209084 - SW 3540C										
Blank (L209084-BLK1)				Prepared: 09/13/2012 Analyzed: 09/18/2012						
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	3.33	U	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	*156*			*ug/kg wet*	*166.67*		*94*	*68-129*		
LCS (L209084-BS1)				Prepared: 09/13/2012 Analyzed: 09/18/2012						
Naphthalene	132		3.33	ug/kg wet	166.67		79	0-127		
Acenaphthylene	141		3.33	ug/kg wet	166.67		85	50-140		
Acenaphthene	135		3.33	ug/kg wet	166.67		81	17-139		
Fluorene	141		3.33	ug/kg wet	166.67		84	28-145		
Phenanthrene	142		3.33	ug/kg wet	166.67		85	30-152		
Anthracene	141		3.33	ug/kg wet	166.67		85	19-171		
Fluoranthene	145		3.33	ug/kg wet	166.67		87	34-159		
Indeno[1,2,3-cd]pyrene	145		3.33	ug/kg wet	166.67		87	31-156		
Pyrene	142		3.33	ug/kg wet	166.67		85	33-152		
Benz[a]anthracene	149		3.33	ug/kg wet	166.67		89	32-157		
Chrysene	142		3.33	ug/kg wet	166.67		85	31-159		
Benzo[b] fluoranthene	154		3.33	ug/kg wet	166.67		93	33-164		
Benzo[k] fluoranthene	150		3.33	ug/kg wet	166.67		90	28-161		
Benzo[a] pyrene	151		3.33	ug/kg wet	166.67		91	29-149		
Dibenz[a,h]anthracene	151		3.33	ug/kg wet	166.67		90	27-153		
Benzo[g,h,i] perylene	150		3.33	ug/kg wet	166.67		90	32-157		
Surrogate: Triphenylene	*165*			*ug/kg wet*	*166.67*		*99*	*68-129*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 09/20/2012 19:41

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 L209084 - SW 3540C										
Matrix Spike (L209084-MS2)		**Source: 1206026-02**		Prepared: 09/13/2012 Analyzed: 09/19/2012						
Naphthalene	409	D	35.7	ug/kg dry	178.66	237	96	0-127		
Acenaphthylene	707	D	35.7	ug/kg dry	178.66	454	142*	50-140		
Acenaphthene	206	D	35.7	ug/kg dry	178.66	35.2 U	115	17-139		
Fluorene	211	D	35.7	ug/kg dry	178.66	17.1	109	28-145		
Phenanthrene	404	D	35.7	ug/kg dry	178.66	199	115	30-152		
Anthracene	155	D	35.7	ug/kg dry	178.66	35.2 U	87	19-171		
Fluoranthene	452	D	35.7	ug/kg dry	178.66	222	129	34-159		
Indeno[1,2,3-cd]pyrene	112	D	35.7	ug/kg dry	178.66	35.2 U	62	31-156		
Pyrene	207	D	35.7	ug/kg dry	178.66	33.9	97	33-152		
Benz[a]anthracene	205	D	35.7	ug/kg dry	178.66	34.2	95	32-157		
Chrysene	176	D	35.7	ug/kg dry	178.66	10.4	93	31-159		
Benzo[b] fluoranthene	108	D	35.7	ug/kg dry	178.66	25.0	46	33-164		
Benzo[k] fluoranthene	139	D	35.7	ug/kg dry	178.66	35.2 U	78	28-161		
Benzo[a] pyrene	233	D	35.7	ug/kg dry	178.66	61.6	96	29-149		
Dibenz[a,h]anthracene	155	D	35.7	ug/kg dry	178.66	35.2 U	87	27-153		
Benzo[g,h,i] perylene	221	D	35.7	ug/kg dry	178.66	35.2 U	124	32-157		
Surrogate: Triphenylene	*192*			*ug/kg dry*	*178.66*		*107*	*68-129*		
Matrix Spike Dup (L209084-MSD2)		**Source: 1206026-02**		Prepared: 09/13/2012 Analyzed: 09/19/2012						
Naphthalene	367	D	35.5	ug/kg dry	177.48	237	73	0-127	27	40
Acenaphthylene	606	D	35.5	ug/kg dry	177.48	454	86	50-140	49*	40
Acenaphthene	200	D	35.5	ug/kg dry	177.48	35.2 U	113	17-139	2	40
Fluorene	170	D	35.5	ug/kg dry	177.48	17.1	86	28-145	23	40
Phenanthrene	375	D	35.5	ug/kg dry	177.48	199	100	30-152	15	40
Anthracene	138	D	35.5	ug/kg dry	177.48	35.2 U	78	19-171	11	40
Fluoranthene	426	D	35.5	ug/kg dry	177.48	222	115	34-159	11	40
Indeno[1,2,3-cd]pyrene	108	D	35.5	ug/kg dry	177.48	35.2 U	61	31-156	3	40
Pyrene	193	D	35.5	ug/kg dry	177.48	33.9	90	33-152	8	40
Benz[a]anthracene	188	D	35.5	ug/kg dry	177.48	34.2	87	32-157	10	40
Chrysene	150	D	35.5	ug/kg dry	177.48	10.4	78	31-159	17	40
Benzo[b] fluoranthene	133	D	35.5	ug/kg dry	177.48	25.0	61	33-164	28	40
Benzo[k] fluoranthene	135	D	35.5	ug/kg dry	177.48	35.2 U	76	28-161	3	40
Benzo[a] pyrene	262	D	35.5	ug/kg dry	177.48	61.6	113	29-149	16	40
Dibenz[a,h]anthracene	131	D	35.5	ug/kg dry	177.48	35.2 U	74	27-153	16	40
Benzo[g,h,i] perylene	125	D	35.5	ug/kg dry	177.48	35.2 U	71	32-157	55*	40
Surrogate: Triphenylene	*169*			*ug/kg dry*	*177.48*		*95*	*68-129*		

PREPARATION BENCH SHEET

L209084

Lionville Laboratory

Printed: 9/14/2012 1:33:52PM

000000019

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
1206024-01	8310 PAH	09/13/2012 16:35	30.02	5				50	WC-Hanford, Inc.	
1206024-02	8310 PAH	09/13/2012 16:35	30.08	5				50	WC-Hanford, Inc.	
1206026-02	8310 PAH	09/13/2012 16:35	30.48	5				50	WC-Hanford, Inc.	
1206026-03	8310 PAH	09/13/2012 16:35	30.03	5				50	WC-Hanford, Inc.	
1206026-04	8310 PAH	09/13/2012 16:35	30.41	5				50	WC-Hanford, Inc.	
1206026-05	8310 PAH	09/13/2012 16:35	30.85	5				50	WC-Hanford, Inc.	
1206026-06	8310 PAH	09/13/2012 16:35	30.93	5				50	WC-Hanford, Inc.	
1209039-01	8310 PAH	09/13/2012 16:35	30.15	5				50	WC-Hanford, Inc.	
L209084-BLK1	QC	09/13/2012 16:35	30	5				50		
L209084-BS1	QC	09/13/2012 16:35	30	5	1200963		50	50		
L209084-BSD1	QC	09/13/2012 16:35	30	5	1200963		50	50		
L209084-MS1	QC	09/13/2012 16:35	30.15	5	1200963	1206024-01	50	50		
L209084-MS2	QC	09/13/2012 16:35	30.07	5	1200963	1206026-02	50	50		
L209084-MS3	QC	09/13/2012 16:35	30.72	5	1200963	1209039-01	50	50		
L209084-MSD1	QC	09/13/2012 16:35	30.43	5	1200963	1206024-01	50	50		
L209084-MSD2	QC	09/13/2012 16:35	30.27	5	1200963	1206026-02	50	50		
L209084-MSD3	QC	09/13/2012 16:35	30.34	5	1200963	1209039-01	50	50		

Extracts Relinquished By — Date 9/14/12

Extracts Received By — Date 09.14.12 10:50

WET CHEMISTRY

Lionville Laboratory, PADEP Lab ID# 15-00009
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 09/26/2012 12:42

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PR49	1206026-02	Soil	06/07/2012 08:59	06/12/2012 09:50
J1PR50	1206026-03	Soil	06/07/2012 09:02	06/12/2012 09:50
J1PR51	1206026-04	Soil	06/07/2012 12:08	06/12/2012 09:50
J1PR52	1206026-05	Soil	06/07/2012 12:12	06/12/2012 09:50
J1PR53	1206026-06	Soil	06/07/2012 12:12	06/12/2012 09:50

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Case Narrative

Client: WC-HANFORD RC-029 K3921
LVL#: 1206026 **Date Received:** 06-12-12

INORGANIC NARRATIVE

1. This narrative covers the analysis of 5 soil samples.

2. The samples were prepared and analyzed in accordance with the method indicated on the data summary report.

   Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list 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.

3. Sample holding times as required by the method and/or contract were not met as the client requested analysis past the holding times as noted on the attached Sample Discrepancy Report 12PM001.

4. The results presented in this report are derived from samples that met LvL's sample acceptance policy.

5. The method blank was within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits.

8 The replicate analysis was within the 20% Relative Percent Difference (RPD) control limit.

9. Results for soil samples are reported on a dry weight basis.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

9/26/12
Date

njp\i06-026

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 10 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12PA001

Initiator: D. Johnson
Date: 9/13/12
Client: WC-Hanford

Batch: 1206024, 1206026
Samples: ALL except 6026-01
Method: SW846/MCAWW/CLP/

Parameter: C6, PAH
Matrix: Soil
Prep Batch: —

1. Reason for SDR

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

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong X Received Past Hold – additional analyses request noticed
__ 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)

Samples analyzed outside of holding time

2. Known or Probable Causes(s)

client request received past holding time

3. Discussion and Proposed Action

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

Other Description:
1. Notify client of holdtime exceedance prior to performing additional analyses
2. Analyze, report and narrate

4. Project Manager Instructions...signature/date: [signature] 9/13/12

✓ Concur with Proposed Action 1 + 2
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person [signature] Jim Ressner 9/13/12
__ Add
__ Cancel

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
__ 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

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 09/26/2012 12:42

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
*	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
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 09/26/2012 12:42

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PR49 (1206026-02) Soil									
Hexavalent Chromium	0.21 U	0.21	0.54	mg/kg dry	1	L209124	09/19/2012 11:00	09/21/2012 10:30	SW846 7196A
J1PR50 (1206026-03) Soil									
Hexavalent Chromium	0.23 U	0.23	0.56	mg/kg dry	1	L209124	09/19/2012 11:00	09/21/2012 10:30	SW846 7196A
J1PR51 (1206026-04) Soil									
Hexavalent Chromium	0.23 U	0.23	0.57	mg/kg dry	1	L209124	09/19/2012 11:00	09/21/2012 10:30	SW846 7196A
J1PR52 (1206026-05) Soil									
Hexavalent Chromium	0.21 U	0.21	0.52	mg/kg dry	1	L209124	09/19/2012 11:00	09/21/2012 10:30	SW846 7196A
J1PR53 (1206026-06) Soil									
Hexavalent Chromium	0.21 U	0.21	0.52	mg/kg dry	1	L209124	09/19/2012 11:00	09/21/2012 10:30	SW846 7196A

Lionville Laboratory, PADEP Lab ID# 15-00009
264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	09/26/2012 12:42

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209124 - Default Prep GenChem										
Blank (L209124-BLK1)				Prepared: 09/19/2012 11:00 Analyzed: 09/21/2012 10:30						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L209124-BS1)				Prepared: 09/19/2012 11:00 Analyzed: 09/21/2012 10:30						
Hexavalent Chromium	4.25	0.20	0.50	mg/kg wet	4.0000		106	80-120		
LCS (L209124-BS2)				Prepared: 09/19/2012 11:00 Analyzed: 09/21/2012 10:30						
Hexavalent Chromium	1060 D	20.0	50.0	mg/kg wet	1204.3		88	80-120		
Duplicate (L209124-DUP2)	**Source: 1206026-02**			Prepared: 09/19/2012 11:00 Analyzed: 09/21/2012 10:30						
Hexavalent Chromium	0.21 U	0.21	0.54	mg/kg dry		0.21 U				20
Matrix Spike (L209124-MS3)	**Source: 1206026-02**			Prepared: 09/19/2012 11:00 Analyzed: 09/21/2012 10:30						
Hexavalent Chromium	4.47 D	0.43	1.07	mg/kg dry	4.2979	0.21 U	104	75-125		
Matrix Spike (L209124-MS4)	**Source: 1206026-02**			Prepared: 09/19/2012 11:00 Analyzed: 09/21/2012 10:30						
Hexavalent Chromium	950 D	21.5	53.7	mg/kg dry	1231.7	0.21 U	77	75-125		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

20 June 2012

RECEIVED
JUN 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 #	1206026
SDG #	K3921
SAF #	RC-029
Date Received	06/12/12
# Samples	6
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	X

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 34 pages.

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1206026

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 Surf # RC-029

Est. Final Proj. Sampling Date:

Project#:

Project Contact/Phone#:

Lionville Laboratory Project Manager: O. Johnson

QC: SW Del: Std. TAT: 15 Days

Date Rec'd: 6-12-12 Date Due: 6-27-12

		A	B
Refrigerator #		2	2
#/Type Container	Liquid		
	Solid	1AG	1AG
Volume	Liquid		
	Solid	125	125
Preservatives		—	—
ANALYSES REQUESTED	ORGANIC: VOA		
	ORGANIC: BNA		
	ORGANIC: Pest/PCB		
	ORGANIC: Herb		
	INORG: Metal Hg		
	INORG: CN		
	INORG: TC Aniens		

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	Metal Hg	CN	TC Aniens
01	J1 PR48			Soil	6-7-12	1015	X		
02	49					0859	X	X	
03	50					0902	X	X	
04	51					1208	X	X	
05	52					1212	X	X	
06	53					1212	X	X	

Special Instructions:

① Met = HSL + B, Mo, Si (no TL)

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	6/12/12	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-142	Page 1 of 2

Collector Q Stowe	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-D-96 French Drain Soils		SAF No. RC-029
Ice Chest No. RCC-07-007	Field Logbook No. EL-1601-06	COA C10D96A000	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A110365		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation			Cool 4C	Cool 4C								
Type of Container			G/P	G/P								
No. of Container(s)			1	1								
Volume			125mL	125mL								
SAMPLE ANALYSIS			See item (1) in Special Instructions.	See item (2) in Special Instructions.								
Sample No.	Matrix *	Sample Date	Sample Time									
J1PR46	SOIL	~~6-7-12~~										
J1PR47	SOIL											
J1PR48	SOIL	6/7/12	1015	X								
J1PR49	SOIL	↓	0859	X	X							
J1PR50	SOIL	↓	0902	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Quincy Stowe	Date/Time 1300 6/7/12	Received By/Stored In WCH MSTankovich	Date/Time 1300 6/7/12
Relinquished By/Removed From WCH MSTankovich	Date/Time 6/7/12 1507	Received By/Stored In 1060#1 A. Freier	Date/Time 1507 6-7-12
Relinquished By/Removed From 1060#1 A. Freier	Date/Time 0940 WCH 6-11-12	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-12-12 0950	Received By/Stored In VICTOR HERNANDEZ	Date/Time 6-12-12 0950
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 (Close-out 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)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2

REVIEWED BY CMB DATE 6-11-12

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

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-142	Page 2 of 2

Collector Q Stowe	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-D-96 French Drain Soils		SAF No. RC-029		
Ice Chest No. RCC-07-007	Field Logbook No. EL-1601-06	COA C10D96A000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A110365		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	125mL	125mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									
Sample No. / Matrix * / Sample Date / Sample Time											
J1PR51 / SOIL / 6/7/12 / 1208	X	X									
J1PR52 / SOIL / ↓ / 1212	X	X									
J1PR53 / SOIL / ↓ / 1212	X	X									
J1PR54 / SOIL / AA 6-7-12											
J1PR55 / SOIL											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Quincy Stowe	Date/Time 1300 6/7/12	Received By/Stored In WCH MSTankovich	Date/Time 1300 6/7/12
Relinquished By/Removed From WCH MSTankovich	Date/Time 1507 6/7/12	Received By/Stored In 1060#1 A. Freier	Date/Time 1507 6-7-12
Relinquished By/Removed From 1060#1 A. Freier	Date/Time 0940 WCH 6-11-12	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 6-12-12 0950	Received By/Stored In Victor Hernandez	Date/Time 6-12-12 0950
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 (Close-out 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)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2

REVIEWED BY CMB DATE 6-11-12

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

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/SAF/SOW/Release #: RC-029

Date: 6/12/12

LvL Batch #: 1206026

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 793665263272
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 2-3°	°C	Cooler # RCC-07-007
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	Na_2, NO_3, PO_4 received outside recommended hold time. JEB 6/12/12
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	see item #12. JEB 6/12/12
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

SR-002-B.doc

METALS

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-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PR48	1206026-01	Soil	06/07/2012 10:15	06/12/2012 09:50
J1PR49	1206026-02	Soil	06/07/2012 08:59	06/12/2012 09:50
J1PR50	1206026-03	Soil	06/07/2012 09:02	06/12/2012 09:50
J1PR51	1206026-04	Soil	06/07/2012 12:08	06/12/2012 09:50
J1PR52	1206026-05	Soil	06/07/2012 12:12	06/12/2012 09:50
J1PR53	1206026-06	Soil	06/07/2012 12:12	06/12/2012 09:50

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-029
LVL#: 1206026
SDG/SAF#: K3921/RC-029

W.O.#: 60049-001-001-0001-00
Date Received: 06-12-12

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 6 soil samples.

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

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 (less than the LOQ).

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

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer with the exception of Magnesium at 82.8% (83.2-116.7% range). The sample results for Magnesium may be slightly biased low.

10. The matrix spike (MS) recoveries for 17 analytes were outside the 75-125% control limits.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial

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.

dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1PR49	Aluminum	22,000	73.5
	Antimony	100	97.5
	Boron	100	89.8
	Calcium	20,800	61.8
	Chromium	100	83.8
	Cobalt	100	86.8
	Copper	100	101.1
	Iron	42,000	60.2
	Lead	100	78.2
	Magnesium	21,600	67.5
	Manganese	1,000	75.1
	Nickel	100	86.2
	Potassium	12,000	81.0
	Selenium	100	90.9
	Silicon	2,100	92.0
	Vanadium	1,000	78.5
	Zinc	1,100	81.6

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater 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

6/18/12
Date

alm/06-026hg%

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-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

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

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-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

J1PR48
1206026-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**217**		3.29	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Antimony	0.395	U	0.395	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Arsenic	**0.201**	B	0.658	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Barium	**2.22**		0.329	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Beryllium	0.132	U	0.132	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Boron	1.32	U	1.32	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cadmium	0.132	U	0.132	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Calcium	**36.0**	B	65.8	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Chromium	0.132	U	0.132	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cobalt	1.32	U	1.32	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Copper	0.658	U	0.658	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Iron	**296**		13.2	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Lead	**0.479**		0.329	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Magnesium	**22.9**	B	49.4	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Manganese	**7.16**		3.29	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Molybdenum	1.32	U	1.32	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Nickel	2.63	U	2.63	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Potassium	**46.2**	B	263	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Selenium	0.197	U	0.197	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silicon	**89.2**		1.32	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silver	0.132	U	0.132	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Sodium	**7.44**	B	32.9	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Vanadium	**0.288**	B	1.65	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Zinc	**1.32**	B	6.58	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Mercury	0.0257	U	0.0257	mg/kg dry	1	L206092	06/13/2012	06/13/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

J1PR49
1206026-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**5490**		4.71	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Antimony	0.566	U	0.566	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Arsenic	**1.87**		0.943	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Barium	**95.1**		0.471	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Beryllium	**0.237**		0.189	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Boron	**4.50**		1.89	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cadmium	**0.144**	B	0.189	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Calcium	**6860**		94.3	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Chromium	**7.15**		0.189	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cobalt	**5.04**		1.89	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Copper	**21.2**		0.943	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Iron	**17000**		18.9	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Lead	**11.7**		0.471	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Magnesium	**2960**		70.7	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Manganese	**240**		4.71	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Molybdenum	**0.373**	B	1.89	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Nickel	**6.99**		3.77	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Potassium	**778**		377	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Selenium	0.283	U	0.283	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silicon	**413**		1.89	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silver	0.189	U	0.189	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Sodium	**300**		47.1	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Vanadium	**45.1**		2.36	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Zinc	**49.4**		9.43	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Mercury	**0.0170**	B	0.0254	mg/kg dry	1	L206092	06/13/2012	06/13/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	Reported: 06/15/2012 08:30

J1PR50
1206026-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**5940**		3.61	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Antimony	0.434	U	0.434	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Arsenic	**2.23**		0.723	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Barium	**59.0**		0.361	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Beryllium	**0.230**		0.145	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Boron	**1.06**	B	1.45	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cadmium	**0.0909**	B	0.145	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Calcium	**5490**		72.3	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Chromium	**6.56**		0.145	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cobalt	**5.27**		1.45	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Copper	**11.4**		0.723	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Iron	**17500**		14.5	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Lead	**3.36**		0.361	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Magnesium	**3350**		54.2	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Manganese	**248**		3.61	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Molybdenum	**0.363**	B	1.45	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Nickel	**6.57**		2.89	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Potassium	**928**		289	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Selenium	0.217	U	0.217	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silicon	**357**		1.45	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silver	0.145	U	0.145	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Sodium	**191**		36.1	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Vanadium	**46.3**		1.81	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Zinc	**36.3**		7.23	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Mercury	0.0274	U	0.0274	mg/kg dry	1	L206092	06/13/2012	06/13/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

J1PR51
1206026-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5300**		4.90	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Antimony	**0.694**		0.588	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Arsenic	**3.20**		0.980	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Barium	**138**		0.490	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Beryllium	**0.281**		0.196	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Boron	**11.8**		1.96	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cadmium	**0.165**	B	0.196	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Calcium	**5340**		98.0	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Chromium	**11.2**		0.196	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cobalt	**5.56**		1.96	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Copper	**20.8**		0.980	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Iron	**18200**		19.6	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Lead	**32.6**		0.490	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Magnesium	**3070**		73.5	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Manganese	**238**		4.90	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Molybdenum	**0.582**	B	1.96	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Nickel	**9.09**		3.92	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Potassium	**571**		392	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Selenium	0.294	U	0.294	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silicon	**242**		1.96	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silver	0.196	U	0.196	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Sodium	**296**		49.0	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Vanadium	**47.2**		2.45	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Zinc	**68.5**		9.80	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Mercury	**0.0297**	B	0.0320	mg/kg dry	1	L206092	06/13/2012	06/13/2012	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	06/15/2012 08:30

J1PR52
1206026-05 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**3670**		3.36	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Antimony	0.403	U	0.403	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Arsenic	**1.25**		0.672	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Barium	**38.7**		0.336	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Beryllium	**0.173**		0.134	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Boron	**1.02**	B	1.34	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cadmium	**0.0550**	B	0.134	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Calcium	**3500**		67.2	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Chromium	**3.29**		0.134	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cobalt	**5.54**		1.34	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Copper	**11.2**		0.672	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Iron	**16200**		13.4	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Lead	**3.17**		0.336	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Magnesium	**2910**		50.4	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Manganese	**209**		3.36	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Molybdenum	**0.257**	B	1.34	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Nickel	**6.32**		2.69	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Potassium	**470**		269	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Selenium	0.202	U	0.202	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silicon	**179**		1.34	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silver	0.134	U	0.134	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Sodium	**217**		33.6	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Vanadium	**47.7**		1.68	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Zinc	**33.9**		6.72	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Mercury	0.0248	U	0.0248	mg/kg dry	1	L206092	06/13/2012	06/13/2012	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

J1PR53
1206026-06 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**4820**		4.85	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Antimony	0.583	U	0.583	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Arsenic	**1.58**		0.971	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Barium	**53.9**		0.485	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Beryllium	**0.204**		0.194	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Boron	**1.14**	B	1.94	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cadmium	**0.0682**	B	0.194	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Calcium	**4480**		97.1	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Chromium	**4.64**		0.194	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Cobalt	**7.15**		1.94	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Copper	**13.7**		0.971	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Iron	**20600**		19.4	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Lead	**3.65**		0.485	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Magnesium	**3860**		72.8	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Manganese	**260**		4.85	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Molybdenum	**0.319**	B	1.94	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Nickel	**7.72**		3.88	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Potassium	**556**		388	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Selenium	0.291	U	0.291	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silicon	**245**		1.94	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Silver	0.194	U	0.194	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Sodium	**340**		48.5	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Vanadium	**52.6**		2.43	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Zinc	**40.6**		9.71	mg/kg dry	1	L206094	06/13/2012	06/14/2012	6010B
Mercury	0.0248	U	0.0248	mg/kg dry	1	L206092	06/13/2012	06/13/2012	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/15/2012 08:30

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 L206092 - SW 7471A Prep										
Blank (L206092-BLK1)				Prepared & Analyzed: 06/13/2012						
Mercury	0.0290	U	0.0290	mg/kg wet						
Duplicate (L206092-DUP2)		**Source: 1206026-02**		Prepared & Analyzed: 06/13/2012						
Mercury	0.0144	B	0.0261	mg/kg dry		0.0170			16.5	20
Matrix Spike (L206092-MS2)		**Source: 1206026-02**		Prepared & Analyzed: 06/13/2012						
Mercury	0.182		0.0261	mg/kg dry	0.14520	0.0170	113	75-125		
Reference (L206092-SRM1)				Prepared & Analyzed: 06/13/2012						
Mercury	1.25		0.0281	mg/kg wet	1.2900		97.3	62.6-138		
Batch L206094 - SW 3050B										
Blank (L206094-BLK1)				Prepared: 06/13/2012 Analyzed: 06/14/2012						
Aluminum	4.31	U	4.31	mg/kg wet						
Antimony	0.517	U	0.517	mg/kg wet						
Arsenic	0.862	U	0.862	mg/kg wet						
Barium	0.431	U	0.431	mg/kg wet						
Beryllium	0.172	U	0.172	mg/kg wet						
Boron	1.72	U	1.72	mg/kg wet						
Cadmium	0.172	U	0.172	mg/kg wet						
Calcium	5.78	B	86.2	mg/kg wet						
Chromium	0.172	U	0.172	mg/kg wet						
Cobalt	1.72	U	1.72	mg/kg wet						
Copper	0.862	U	0.862	mg/kg wet						
Iron	17.2	U	17.2	mg/kg wet						
Lead	0.431	U	0.431	mg/kg wet						
Magnesium	64.7	U	64.7	mg/kg wet						
Manganese	4.31	U	4.31	mg/kg wet						
Molybdenum	1.72	U	1.72	mg/kg wet						
Nickel	3.45	U	3.45	mg/kg wet						
Potassium	345	U	345	mg/kg wet						
Selenium	0.259	U	0.259	mg/kg wet						
Silicon	1.72	U	1.72	mg/kg wet						
Silver	0.172	U	0.172	mg/kg wet						
Sodium	43.1	U	43.1	mg/kg wet						
Vanadium	2.16	U	2.16	mg/kg wet						
Zinc	8.62	U	8.62	mg/kg wet						

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

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 L206094 - SW 3050B										
Duplicate (L206094-DUP2)		**Source: 1206026-02**		Prepared: 06/13/2012 Analyzed: 06/14/2012						
Aluminum	5840		4.26	mg/kg dry		5490			6.34	20
Antimony	0.512	U	0.512	mg/kg dry		0.566 U				20
Arsenic	2.10		0.853	mg/kg dry		1.87			11.5	20
Barium	120		0.426	mg/kg dry		95.1			22.9*	20
Beryllium	0.252		0.171	mg/kg dry		0.237			6.15	20
Boron	5.03		1.71	mg/kg dry		4.50			11.1	20
Cadmium	0.137	B	0.171	mg/kg dry		0.144			5.34	20
Calcium	5250		85.3	mg/kg dry		6860			26.7*	20
Chromium	7.84		0.171	mg/kg dry		7.15			9.25	20
Cobalt	5.17		1.71	mg/kg dry		5.04			2.46	20
Copper	24.1		0.853	mg/kg dry		21.2			12.9	20
Iron	16700		17.1	mg/kg dry		17000			1.70	20
Lead	10.1		0.426	mg/kg dry		11.7			14.9	20
Magnesium	3250		64.0	mg/kg dry		2960			9.22	20
Manganese	235		4.26	mg/kg dry		240			1.98	20
Molybdenum	0.371	B	1.71	mg/kg dry		0.373			0.326	20
Nickel	8.21		3.41	mg/kg dry		6.99			16.1	20
Potassium	826		341	mg/kg dry		778			6.03	20
Selenium	0.256	U	0.256	mg/kg dry		0.283 U				20
Silicon	481		1.71	mg/kg dry		413			15.2	20
Silver	0.171	U	0.171	mg/kg dry		0.189 U				20
Sodium	321		42.6	mg/kg dry		300			6.82	20
Vanadium	44.5		2.13	mg/kg dry		45.1			1.43	20
Zinc	51.1		8.53	mg/kg dry		49.4			3.30	20
Matrix Spike (L206094-MS2)		**Source: 1206026-02**		Prepared: 06/13/2012 Analyzed: 06/14/2012						
Aluminum	5950		4.33	mg/kg dry	173.30	5490	266*	75-125		
Antimony	15.2		0.520	mg/kg dry	43.326	0.566 U	35.0*	75-125		
Arsenic	135		0.867	mg/kg dry	173.30	1.87	76.6	75-125		
Barium	271		0.433	mg/kg dry	173.30	95.1	102	75-125		
Beryllium	3.49		0.173	mg/kg dry	4.3326	0.237	75.0	75-125		
Boron	65.9		1.73	mg/kg dry	86.652	4.50	70.8*	75-125		
Cadmium	3.81		0.173	mg/kg dry	4.3326	0.144	84.6	75-125		
Calcium	6420		86.7	mg/kg dry	2166.3	6860	-20.3*	75-125		
Chromium	19.2		0.173	mg/kg dry	17.330	7.15	69.4*	75-125		
Cobalt	36.7		1.73	mg/kg dry	43.326	5.04	73.2*	75-125		
Copper	34.1		0.867	mg/kg dry	21.663	21.2	59.5*	75-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	Reported: 06/15/2012 08:30

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 L206094 - SW 3050B									
Matrix Spike (L206094-MS2)		**Source: 1206026-02**	Prepared: 06/13/2012 Analyzed: 06/14/2012						
Iron	15100	17.3	mg/kg dry	86.652	17000	-2150*	75-125		
Lead	39.5	0.433	mg/kg dry	43.326	11.7	64.2*	75-125		
Magnesium	4410	65.0	mg/kg dry	2166.3	2960	67.0*	75-125		
Manganese	234	4.33	mg/kg dry	43.326	240	-14.9*	75-125		
Molybdenum	67.2	1.73	mg/kg dry	86.652	0.373	77.1	75-125		
Nickel	39.2	3.47	mg/kg dry	43.326	6.99	74.4*	75-125		
Potassium	2390	347	mg/kg dry	2166.3	778	74.3*	75-125		
Selenium	127	0.260	mg/kg dry	173.30	0.283 U	73.5*	75-125		
Silicon	350	1.73	mg/kg dry	86.652	413	-72.0*	75-125		
Silver	3.29	0.173	mg/kg dry	4.3326	0.189 U	75.9	75-125		
Sodium	2090	43.3	mg/kg dry	2166.3	300	82.6	75-125		
Vanadium	70.7	2.17	mg/kg dry	43.326	45.1	58.9*	75-125		
Zinc	77.4	8.67	mg/kg dry	43.326	49.4	64.6*	75-125		
Reference (L206094-SRM1)			Prepared: 06/13/2012 Analyzed: 06/14/2012						
Aluminum	8600	14.4	mg/kg wet	6670.0		129	0-200.89		
Antimony	36.4	1.73	mg/kg wet	53.000		68.6	0-235.8		
Arsenic	106	2.88	mg/kg wet	114.00		93.0	82.8-117.54		
Barium	287	1.44	mg/kg wet	307.00		93.5	79.8-120.2		
Beryllium	98.2	0.577	mg/kg wet	108.00		90.9	82.8-117.6		
Boron	73.8	5.77	mg/kg wet	85.100		86.7	67.5-132.8		
Cadmium	210	0.577	mg/kg wet	225.00		93.5	83.6-116.4		
Calcium	2940	288	mg/kg wet	3360.0		87.5	83.3-116.9		
Chromium	73.1	0.577	mg/kg wet	77.200		94.7	73.3-126.4		
Cobalt	152	5.77	mg/kg wet	166.00		91.4	80.7-118.7		
Copper	253	2.88	mg/kg wet	271.00		93.4	80.8-119.2		
Iron	7670	57.7	mg/kg wet	8420.0		91.1	78.6-121.1		
Lead	169	1.44	mg/kg wet	190.00		89.1	81.6-118.4		
Magnesium	7100	216	mg/kg wet	8570.0		82.8*	83.2-116.7		
Manganese	721	14.4	mg/kg wet	965.00		74.7	69.3-130.5		
Molybdenum	224	5.77	mg/kg wet	235.00		95.4	76.2-123.8		
Nickel	208	11.5	mg/kg wet	221.00		94.0	79.6-120.8		
Potassium	13000	1150	mg/kg wet	14400		89.9	81.9-118.1		
Selenium	175	0.865	mg/kg wet	187.00		93.5	75.9-124.6		
Silicon	384	5.77	mg/kg wet	807.00		47.5	0-219.3		
Silver	76.8	0.577	mg/kg wet	83.500		91.9	82.7-117.1		
Sodium	8370	144	mg/kg wet	9730.0		86.0	82.5-117.2		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/15/2012 08:30

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 L206094 - SW 3050B									
Reference (L206094-SRM1)			Prepared: 06/13/2012 Analyzed: 06/14/2012						
Vanadium	92.9	7.21	mg/kg wet	98.700		94.1	75.9-123.6		
Zinc	182	28.8	mg/kg wet	199.00		91.4	78.4-121.6		

Lionville Laboratory

Logbook #: 1128

SAMPLE DIGESTION RECORD

Digestion Batch #: L206094
Date/Time Initiated: 6/13/12 1030
Date/Time Completed: 6/13/12 1628
Analyst: JS
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 #: B 14
Balance Cal Verification: Y NA
Temp: 95
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
1206025-01		0.57	50		TO	Fine	Brown	Rocks	N/A
L206094-Dup1		0.65	50						
-MS1	0.5	0.76	50						
1206025-02		0.51	50			Fine	Brown	Rocks	
03		0.68	50			Fine	Brown	Rocks	
04		0.56	50			Fine	Brown	Rocks	
05		0.55	50			Fine	Brown	Rocks	
06		0.78	50			Fine	Brown	Rocks	
07		0.70	50			Fine	Brown	Rocks	
08		0.65	50			Coarse	Ottawa Sand		
1206026-01		0.76	50			coarse	Ottawa Sand		
-02		0.57	50			Fine	Brown	Rocks	
L206094-Dup2		0.63	50						
-MS2	0.5	0.62	50						
1206026-03		0.78	50			Fine	Brown	Rocks	
-04		0.58	50			Fine	Brown	Rocks	
-05		0.78	50			Fine	Brown	Rocks	
-06		0.54	50			Fine	Brown	Rocks	
L206094 BLK		0.58	50			Coarse	Boiling Chips		
SRM		0.52	50			Fine	Pink Sand		

JS
6/13/12

Spiking IDs / Expiration Date:
MS#: 1200457
LCS#: 1101357

Reagent IDs:
HNO_3 K94023
HCl L0103
H_2O_2 K09A003
1:1 HNO_3 637-66-02
1:1 HCl

File ID#:

Data Review By/Date: CGM 6/14/12

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Signed\SPI\Metals Digestion log.doc

Page #:

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 6/13/12
Start Time/Temp: 1455/95°
End Time/Temp: 1525/95°

Instrument ID: HG3.1
Balance # B29 /NA
Pipette Calibration (Daily) ✓

Logbook # 1132
Prep Batch: L206092
Worksheet: HG061301
SOP No. ME-HgCVAA
BLOCK 1 (3) 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				10ml	50	
0.2 µg/L		0.100		10ml	50	
1.0 µg/L		0.500		10ml	50	
2.0 µg/L		1.000		10ml	50	
5.0 µg/L		2.500		10ml	50	
10.0 µg/L		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L206092-BLK1				0.31	50	
SRM1		✓	✓	0.32	50	
1206025-01				0.37	50	
L206092-DUP1				0.35	50	
MS1		0.500	1.0	0.36	50	
1206025-02				0.36	50	
03				0.36	50	
04				0.34	50	
05				0.35	50	
06				0.34	50	
07				0.35	50	
08				0.35	50	
1206026-01				0.35	50	
02				0.38	50	
L206092-DUP2				0.37	50	
MS2		0.500	1.0	0.37	50	
1206026-03				0.37	50	
04				0.32	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1200586	6/13/12 1015
ICV/CCV/LCS	(I.V. 1200532)	N/A

Reviewed By/Date: [illegible] 6/14/12

Soil LCS True Value = 1.29 mg/Kg
Standard # 1101357 ✓

se book # 9368 for std traceability information

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

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 6/13/12
Start Time/Temp: See page 055
End Time/Temp: See page 055

Instrument ID: HG3.1
Balance # B29 /NA
Pipette Calibration (Daily) (N) ____

Logbook # 1132
Prep Batch: L206092
Worksheet: HG061301
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.
1206026-05				0.38	50	
06				0.38	50	

MM 6/13/12

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

Reviewed By/Date: [illegible] 6/14/12

Soil LCS True Value = See page 055 mg/Kg
Standard # ____

se book # 9368 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 #:

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PREPARATION BENCH SHEET

L206094

Lionville Laboratory

Printed: 6/13/2012 3:45:00PM

000000025

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
1206025-01	6010B ICP Metals	06/13/2012 10:09	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-02	6010B ICP Metals	06/13/2012 10:09	0.51	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-03	6010B ICP Metals	06/13/2012 10:09	0.68	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-04	6010B ICP Metals	06/13/2012 10:09	0.56	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-05	6010B ICP Metals	06/13/2012 10:09	0.55	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-06	6010B ICP Metals	06/13/2012 10:09	0.78	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-07	6010B ICP Metals	06/13/2012 10:09	0.7	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206025-08	6010B ICP Metals	06/13/2012 10:09	0.65	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206026-01	6010B ICP Metals	06/13/2012 10:09	0.76	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206026-02	6010B ICP Metals	06/13/2012 10:09	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206026-03	6010B ICP Metals	06/13/2012 10:09	0.78	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206026-04	6010B ICP Metals	06/13/2012 10:09	0.58	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206026-05	6010B ICP Metals	06/13/2012 10:09	0.78	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206026-06	6010B ICP Metals	06/13/2012 10:09	0.54	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
L206094-BLK1	QC	06/13/2012 10:09	0.58	50						
L206094-DUP1	QC	06/13/2012 10:09	0.65	50		1206025-01				
L206094-DUP2	QC	06/13/2012 10:09	0.63	50		1206026-02				
L206094-MS1	QC	06/13/2012 10:09	0.76	50	1200457	1206025-01	500			
L206094-MS2	QC	06/13/2012 10:09	0.62	50	1200457	1206026-02	500			
L206094-SRM1	QC	06/13/2012 10:09	0.52	50			520			

Extracts Relinquished By Date

Extracts Received By Date 06/13/12

INORGANICS

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/19/2012 14:06

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PR48	1206026-01	Soil	06/07/2012 10:15	06/12/2012 09:50
J1PR49	1206026-02	Soil	06/07/2012 08:59	06/12/2012 09:50
J1PR50	1206026-03	Soil	06/07/2012 09:02	06/12/2012 09:50
J1PR51	1206026-04	Soil	06/07/2012 12:08	06/12/2012 09:50
J1PR52	1206026-05	Soil	06/07/2012 12:12	06/12/2012 09:50
J1PR53	1206026-06	Soil	06/07/2012 12:12	06/12/2012 09:50

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Case Narrative

Client: WC-HANFORD RC-029 K3921
LVL#: 1206026

Date Received: 06-12-12

INORGANIC NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

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

   Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list 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.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrite, Nitrate and Orthophosphate that were received past hold.

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit with the exception of Orthophosphate at 23.3% for which the replicate results were below the limit of quantitation.

9. Results for soil samples are reported on a dry weight basis.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory

6/20/12
Date

njp\i06-026

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 12 pages.

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/19/2012 14:06

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
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
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/19/2012 14:06

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier		LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PR48 (1206026-01) Soil										
%Solids	**100**			0.1	% by Weight	1	L206093	06/13/2012	06/13/2012	SM2540G
J1PR49 (1206026-02) Soil										
%Solids	**93.1**			0.1	% by Weight	1	L206093	06/13/2012	06/13/2012	SM2540G
Bromide	1.1	U	1.1	5.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Chloride	1.1	U	1.1	5.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Fluoride	1.1	U	1.1	5.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate	**12.0**		1.1	5.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrite	1.1	U	1.1	5.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Orthophosphate	**2.5**	B	2.1	10.5	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Sulfate	**11.3**		1.1	5.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**2.85**		0.11	0.53	mg/kg dry	1	L206125	06/15/2012	06/15/2012	EPA 353.2
J1PR50 (1206026-03) Soil										
%Solids	**88.7**			0.1	% by Weight	1	L206093	06/13/2012	06/13/2012	SM2540G
Bromide	1.1	U	1.1	5.6	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Chloride	1.1	U	1.1	5.6	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Fluoride	**1.1**	B	1.1	5.6	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate	**4.1**	B	1.1	5.6	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrite	1.1	U	1.1	5.6	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Orthophosphate	2.3	U	2.3	11.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Sulfate	**4.4**	B	1.1	5.6	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**0.98**		0.11	0.56	mg/kg dry	1	L206125	06/15/2012	06/15/2012	EPA 353.2
J1PR51 (1206026-04) Soil										
%Solids	**88.0**			0.1	% by Weight	1	L206093	06/13/2012	06/13/2012	SM2540G

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Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier		LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PR51 (1206026-04) Soil										
Bromide	1.1	U	1.1	5.4	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Chloride	**1.1**	B	1.1	5.4	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Fluoride	1.1	U	1.1	5.4	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate	**123**		2.1	10.7	mg/kg dry	2	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrite	1.1	U	1.1	5.4	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Orthophosphate	**7.6**	B	2.1	10.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Sulfate	**171**	D	2.1	10.7	mg/kg dry	2	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**28.4**	D	0.54	2.69	mg/kg dry	5	L206125	06/15/2012	06/15/2012	EPA 353.2
J1PR52 (1206026-05) Soil										
%Solids	**95.3**			0.1	% by Weight	1	L206093	06/13/2012	06/13/2012	SM2540G
Bromide	0.9	U	0.9	4.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Chloride	0.9	U	0.9	4.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Fluoride	0.9	U	0.9	4.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate	**12.3**		0.9	4.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrite	0.9	U	0.9	4.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Orthophosphate	1.9	U	1.9	9.5	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Sulfate	**15.3**		0.9	4.7	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**3.04**		0.09	0.47	mg/kg dry	1	L206125	06/15/2012	06/15/2012	EPA 353.2
J1PR53 (1206026-06) Soil										
%Solids	**95.4**			0.1	% by Weight	1	L206093	06/13/2012	06/13/2012	SM2540G
Bromide	1.0	U	1.0	5.2	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Chloride	1.0	U	1.0	5.2	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Fluoride	1.0	U	1.0	5.2	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate	**13.7**		1.0	5.2	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrite	1.0	U	1.0	5.2	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3921 Project Manager: Joan Kessner	**Reported:** 06/19/2012 14:06

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier		LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PR53 (1206026-06) Soil										
Orthophosphate	**2.3**	B	2.1	10.3	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Sulfate	**14.5**		1.0	5.2	mg/kg dry	1	L206136	06/15/2012	06/15/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**3.26**		0.10	0.52	mg/kg dry	1	L206125	06/15/2012	06/15/2012	EPA 353.2

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Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206093 - % Solids										
Duplicate (L206093-DUP3)	**Source: 1206026-02**			Prepared & Analyzed: 06/13/2012						
%Solids	92.8		0.1	% by Weight		93.1			0.3	20
Batch L206125 - Default Prep GenChem										
Blank (L206125-BLK1)				Prepared & Analyzed: 06/15/2012						
Nitrate/Nitrite as N	0.10 U	0.10	0.48	mg/kg wet						
LCS (L206125-BS1)				Prepared & Analyzed: 06/15/2012						
Nitrate/Nitrite as N	5.19	0.10	0.50	mg/kg wet	4.9652		105	90-110		
Duplicate (L206125-DUP1)	**Source: 1206026-02**			Prepared & Analyzed: 06/15/2012						
Nitrate/Nitrite as N	2.72	0.10	0.50	mg/kg dry		2.85			4.58	20
Matrix Spike (L206125-MS1)	**Source: 1206026-02**			Prepared & Analyzed: 06/15/2012						
Nitrate/Nitrite as N	8.19	0.11	0.53	mg/kg dry	5.3439	2.85	99.9	75-125		
Batch L206136 - Default Prep GenChem										
Blank (L206136-BLK1)				Prepared & Analyzed: 06/15/2012						
Fluoride	1.0 U	1.0	5.0	mg/kg wet						
Chloride	1.0 U	1.0	5.0	mg/kg wet						
Bromide	1.0 U	1.0	5.0	mg/kg wet						
Orthophosphate	2.0 U	2.0	10.0	mg/kg wet						
Sulfate	1.0 U	1.0	5.0	mg/kg wet						
Nitrate	1.0 U	1.0	5.0	mg/kg wet						
Nitrite	1.0 U	1.0	5.0	mg/kg wet						

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3921	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/19/2012 14:06

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206136 - Default Prep GenChem										
LCS (L206136-BS1)				Prepared & Analyzed: 06/15/2012						
Fluoride	52.0	1.0	5.0	mg/kg wet	50.000		104	80-120		
Chloride	48.4	1.0	5.0	mg/kg wet	50.000		96.8	80-120		
Bromide	49.3	1.0	5.0	mg/kg wet	50.000		98.6	80-120		
Orthophosphate	50.1	2.0	10.0	mg/kg wet	50.000		100	80-120		
Sulfate	51.4	1.0	5.0	mg/kg wet	50.000		103	80-120		
Nitrate	49.2	1.0	5.0	mg/kg wet	50.000		98.4	80-120		
Nitrite	50.0	1.0	5.0	mg/kg wet	50.000		100	80-120		
Duplicate (L206136-DUP1)		**Source: 1206026-02**		Prepared & Analyzed: 06/15/2012						
Fluoride	1.0 U	1.0	5.0	mg/kg dry		1.1 U				20
Chloride	1.0 U	1.0	5.0	mg/kg dry		1.1 U				20
Bromide	1.0 U	1.0	5.0	mg/kg dry		1.1 U				20
Orthophosphate	3.2 B	2.0	10.0	mg/kg dry		2.5			23.3*	20
Sulfate	10.1	1.0	5.0	mg/kg dry		11.3			11.1	20
Nitrate	11.5	1.0	5.0	mg/kg dry		12.0			4.45	20
Nitrite	1.0 U	1.0	5.0	mg/kg dry		1.1 U				20
Matrix Spike (L206136-MS1)		**Source: 1206026-02**		Prepared & Analyzed: 06/15/2012						
Fluoride	56.3	1.1	5.3	mg/kg dry	53.439	1.1 U	105	75-125		
Chloride	52.5	1.1	5.3	mg/kg dry	53.439	1.1 U	98.2	75-125		
Bromide	53.4	1.1	5.3	mg/kg dry	53.439	1.1 U	100	75-125		
Orthophosphate	55.1	2.1	10.7	mg/kg dry	53.439	2.5	98.5	75-125		
Sulfate	65.6	1.1	5.3	mg/kg dry	53.439	11.3	102	75-125		
Nitrate	65.7	1.1	5.3	mg/kg dry	53.439	12.0	100	75-125		
Nitrite	53.9	1.1	5.3	mg/kg dry	53.439	1.1 U	101	75-125		