SAF-RC-206
Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites – Full Soil Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 3/5/13
INITIAL/DATE

COMMENTS:

SDG K4047 SAF-RC-206

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 100-C-7:1 (West Sidewall Expansion)

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

5 March 2013

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

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1301037
SDG #	K4047
SAF #	RC-206
Date Received	01/17/13
# Samples	4
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 30 pages.

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1301037

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 WCHanford SAF# RC-206

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager O. Johnson

QC SW Del SH TAT 21

Date Rec'd 1-17-13 Date Due 2-7-13

Refrigerator #

#/Type Container	Liquid							A: 2		B: 2					
	Solid							1P		1P					
Volume	Liquid														
	Solid							120		120					
Preservatives								1		1					

ANALYSES REQUESTED →

ORGANIC: VOA | BNA | Pest/PCB | Herb

INORG: Metal Hg | CN | CR+6

Lionville Laboratory Use Only: METALS | Cr+6 only

MATRIX CODES: W Water; WW Waste Water; GW Groundwater; WST Waste; WI Wipe; SO Solid; S Soil; SL Sludge; SE Sediment; PC Paint Chips; O Oil; NAL Non-Aqueous Liquid; L Leachate; A Air; T Tissue; F Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	METALS	Cr+6 only
01	J1R614			Soil	1-15-13	1355	X	X
02	617			"	"	1340	X	X
03	623			"	"	1345	X	X
04	624			"	"	1350	X	X

Special Instructions:

MATRIX QC

HSL+B, Mo, Si NOTL

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	1/17/13	0935

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

DH 1/15/13

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-206-067	Page 1 of 2

Collector R. Brackett	Company Contact / Telephone No. J. Kessner 509-375-4688	Project Coordinator KESSNER, JH	Price Code 8L / Data Turnaround 21 Days
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - F	Sampling Location 100-C-7:1 (West Sidewall Expansion)	SAF No. RC-206	
Ice Chest No. WCH-11-020	Field Logbook No. EL-1655-07 / COA R00C712000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A 120713	Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4 degrees centigrade

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.	Chromium Hex - 7196									
Sample No. / Matrix * / Sample Date / Sample Time											
~~J1R613~~ SOIL 12/27/12											
J1R614 SOIL 1/15/13 1355	X	X									
~~J1R615~~ 12/27/12 SOIL											
~~J1R616~~ DH 1/15/13 SOIL											
J1R617 SOIL 1/15/13 1340	X	X									

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Rob Brackett Date/Time 1415 1-15-13	Received By/Stored In: Don Heidelberg 1060 #1 Date/Time 1/15/13 1415
Relinquished By/Removed From: Don Heidelberg Date/Time 1/15/13 1610	Received By/Stored In: A. Freier A. Freier 1-15-13 Date/Time 1610
Relinquished By/Removed From: A. Freier A. Freier 1060#1 1-16-13 WCH Date/Time 1005	Received By/Stored In: Fed Ex Date/Time
Relinquished By/Removed From: Fed Ex 1-17-13 Date/Time 0935	Received By/Stored In: Victor Hernandez 1-17-13 Date/Time 0935
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) {Mercury}

REVIEWED BY CMB DATE 1-16-13

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

0000000004

2 of 2

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-206-067	Page ~~2~~ of ~~3~~ 1/15/13
Collector R. Brackett	Company Contact J. Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code **8L**
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - F	Sampling Location 100-C-7:1 (West Sidewall Expansion)		SAF No. RC-206	Data Turnaround **21 Days**
Ice Chest No. WCH-11-020	Field Logbook No. EL-1655-07	COA R00C712000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A-120713		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Cool 4 degrees centigrade

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.	Chromium Hex - 7196									
Sample No.	Matrix *	Sample Date	Sample Time								
J1R623	SOIL	1/15/13	1345	X	X						
J1R624	SOIL	1/15/13	1350	X	X						
~~J1R625~~ 12/26/12	~~SOIL~~										
J1R626	~~SOIL~~										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Rob Brackett RB	1415 1-15-13	Don Heidelberg	1415 1/15/13
Don Heidelberg	1610 1/15/13	1060#1 A. Freier	1610 1-15-13
1060#1 A. Freier	1005 1-16-13 WCH	Fed Ex	
Fed Ex	1-17-13 0935	Victor Hernandez	1-17-13 0935
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) {Mercury}

REVIEWED BY CMB DATE 1-16-13

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

0000000005

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford **Date:** 1-17-13

Project/SAF/SOW/Release #: RC-206

LvL Batch #: 1301037 **Sample Custodian:** Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7945 3113 2725
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** 2-4°	**°C**	Cooler # WCH-11-020
How was the temperature taken?	☐ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX, RSK-175, Sulfides, Non-Halogenated VOAs (Alcohol/Glycol) free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

METALS

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R614	1301037-01	Soil	01/15/2013 13:55	01/17/2013 09:35
J1R617	1301037-02	Soil	01/15/2013 13:40	01/17/2013 09:35
J1R623	1301037-03	Soil	01/15/2013 13:45	01/17/2013 09:35
J1R624	1301037-04	Soil	01/15/2013 13:50	01/17/2013 09:35

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-206
LVL#: 1301037
SDG/SAF#: K4047/RC-206

W.O.#: 60049-001-001-0001-00
Date Received: 01-17-13

METALS

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

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

1. This narrative covers the analyses of 4 soil samples.

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

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

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

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

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

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits.

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

10. The matrix spike (MS) recoveries for 6 analytes were outside the 75-125% control limits.

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

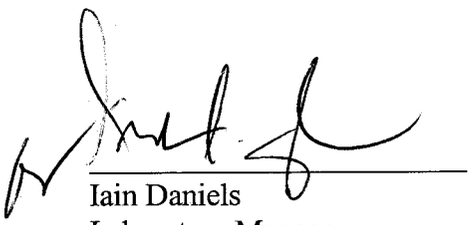
11. For analytes where the MS is out of control, a post-digestion MS (PDS) is performed. A PDS was prepared at meaningful concentration levels for the following analytes: Aluminum, Antimony, Calcium, Iron, Manganese, and Silicon.

12. All duplicate analyses were within 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

2/28/13
Date

jjw/01-037

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

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

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

J1R614

1301037-01 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7550**		14.9	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Antimony	1.79	U	1.79	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Arsenic	**2.49**	B	2.98	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Barium	**68.7**		1.49	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Beryllium	**0.305**	B	0.595	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Boron	5.95	U	5.95	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cadmium	0.595	U	0.595	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Calcium	**6100**		298	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Chromium	**6.82**		0.595	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cobalt	**10.0**		5.95	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Copper	**17.3**		2.98	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Iron	**28100**		59.5	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Lead	**3.59**		1.49	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Magnesium	**4950**		223	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Manganese	**360**		14.9	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Molybdenum	5.95	U	5.95	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Nickel	**8.29**	B	11.9	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Potassium	**1160**	B	1190	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Selenium	0.893	U	0.893	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silicon	**362**		5.95	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silver	0.595	U	0.595	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Sodium	**510**		149	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Vanadium	**74.6**		7.44	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Zinc	**51.2**		29.8	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Mercury	0.0270	U	0.0270	mg/kg dry	1	L301193	01/28/2013	01/29/2013	7471A

LIONVILLE LABORATORY
A division of Fiberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

J1R617
1301037-02 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**5170**		12.8	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Antimony	1.54	U	1.54	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Arsenic	**1.62**	B	2.57	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Barium	**42.9**		1.28	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Beryllium	**0.234**	B	0.514	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Boron	5.14	U	5.14	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cadmium	0.514	U	0.514	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Calcium	**6300**		257	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Chromium	**4.45**		0.514	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cobalt	**8.69**		5.14	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Copper	**16.2**		2.57	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Iron	**27400**		51.4	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Lead	**2.69**		1.28	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Magnesium	**3920**		193	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Manganese	**316**		12.8	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Molybdenum	5.14	U	5.14	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Nickel	**6.11**	B	10.3	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Potassium	**690**	B	1030	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Selenium	0.771	U	0.771	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silicon	**222**		5.14	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silver	0.514	U	0.514	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Sodium	**384**		128	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Vanadium	**83.2**		6.42	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Zinc	**48.1**		25.7	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Mercury	0.0269	U	0.0269	mg/kg dry	1	L301193	01/28/2013	01/29/2013	7471A

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

J1R623

1301037-03 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**4410**		14.0	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Antimony	1.68	U	1.68	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Arsenic	**1.59**	B	2.80	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Barium	**54.2**		1.40	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Beryllium	**0.229**	B	0.559	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Boron	5.59	U	5.59	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cadmium	0.559	U	0.559	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Calcium	**5650**		280	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Chromium	**2.95**		0.559	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cobalt	**9.68**		5.59	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Copper	**16.2**		2.80	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Iron	**28800**		55.9	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Lead	**2.11**		1.40	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Magnesium	**4220**		210	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Manganese	**310**		14.0	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Molybdenum	5.59	U	5.59	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Nickel	**5.22**	B	11.2	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Potassium	**628**	B	1120	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Selenium	0.839	U	0.839	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silicon	**192**		5.59	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silver	0.559	U	0.559	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Sodium	**359**		140	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Vanadium	**79.4**		6.99	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Zinc	**50.4**		28.0	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Mercury	0.0264	U	0.0264	mg/kg dry	1	L301193	01/28/2013	01/29/2013	7471A

LIONVILLE LABORATORY
A division of Baseline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

J1R624

1301037-04 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**12100**		14.7	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Antimony	1.77	U	1.77	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Arsenic	**4.46**		2.95	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Barium	**111**		1.47	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Beryllium	**0.435**	B	0.590	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Boron	**1.77**	B	5.90	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cadmium	**0.152**	B	0.590	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Calcium	**6230**		295	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Chromium	**21.5**		0.590	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Cobalt	**8.03**		5.90	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Copper	**18.4**		2.95	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Iron	**23500**		59.0	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Lead	**7.36**		1.47	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Magnesium	**5910**		221	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Manganese	**375**		14.7	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Molybdenum	5.90	U	5.90	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Nickel	**18.2**		11.8	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Potassium	**1510**		1180	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Selenium	0.885	U	0.885	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silicon	**933**		5.90	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Silver	0.590	U	0.590	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Sodium	**327**		147	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Vanadium	**58.0**		7.37	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Zinc	**55.0**		29.5	mg/kg dry	3	L301189	01/28/2013	01/29/2013	6010B
Mercury	0.0277	U	0.0277	mg/kg dry	1	L301193	01/28/2013	01/29/2013	7471A

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

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 L301189 - SW 3050B										
Blank (L301189-BLK1)				Prepared: 01/28/2013 Analyzed: 01/29/2013						
Aluminum	4.63	U	4.63	mg/kg wet						
Antimony	0.556	U	0.556	mg/kg wet						
Arsenic	0.926	U	0.926	mg/kg wet						
Barium	0.463	U	0.463	mg/kg wet						
Beryllium	0.185	U	0.185	mg/kg wet						
Boron	1.85	U	1.85	mg/kg wet						
Cadmium	0.185	U	0.185	mg/kg wet						
Calcium	92.6	U	92.6	mg/kg wet						
Chromium	0.185	U	0.185	mg/kg wet						
Cobalt	1.85	U	1.85	mg/kg wet						
Copper	0.926	U	0.926	mg/kg wet						
Iron	18.5	U	18.5	mg/kg wet						
Lead	0.463	U	0.463	mg/kg wet						
Magnesium	69.4	U	69.4	mg/kg wet						
Manganese	4.63	U	4.63	mg/kg wet						
Molybdenum	1.85	U	1.85	mg/kg wet						
Nickel	3.70	U	3.70	mg/kg wet						
Potassium	370	U	370	mg/kg wet						
Selenium	0.278	U	0.278	mg/kg wet						
Silicon	1.85	U	1.85	mg/kg wet						
Silver	0.185	U	0.185	mg/kg wet						
Sodium	46.3	U	46.3	mg/kg wet						
Vanadium	2.31	U	2.31	mg/kg wet						
Zinc	9.26	U	9.26	mg/kg wet						
Duplicate (L301189-DUP1)			**Source: 1301037-01**	Prepared: 01/28/2013 Analyzed: 01/29/2013						
Aluminum	7580		12.7	mg/kg dry		7550			0.5	20
Antimony	1.53	U	1.53	mg/kg dry		1.79 U				20
Arsenic	2.15	B	2.54	mg/kg dry		2.49			15	20
Barium	68.4		1.27	mg/kg dry		68.7			0.4	20
Beryllium	0.303	B	0.509	mg/kg dry		0.305			0.6	20
Boron	5.09	U	5.09	mg/kg dry		5.95 U				20
Cadmium	0.509	U	0.509	mg/kg dry		0.595 U				20
Calcium	7020		254	mg/kg dry		6100			14	20
Chromium	7.24		0.509	mg/kg dry		6.82			6	20
Cobalt	9.40		5.09	mg/kg dry		10.0			6	20
Copper	19.0		2.54	mg/kg dry		17.3			9	20

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

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 L301189 - SW 3050B										
Duplicate (L301189-DUP1)		**Source: 1301037-01**		Prepared: 01/28/2013 Analyzed: 01/29/2013						
Iron	28300		50.9	mg/kg dry		28100			0.6	20
Lead	3.26		1.27	mg/kg dry		3.59			10	20
Magnesium	4830		191	mg/kg dry		4950			3	20
Manganese	345		12.7	mg/kg dry		360			4	20
Molybdenum	5.09	U	5.09	mg/kg dry		5.95 U				20
Nickel	7.76	B	10.2	mg/kg dry		8.29			7	20
Potassium	1090		1020	mg/kg dry		1160			7	20
Selenium	0.763	U	0.763	mg/kg dry		0.893 U				20
Silicon	314		5.09	mg/kg dry		362			14	20
Silver	0.509	U	0.509	mg/kg dry		0.595 U				20
Sodium	542		127	mg/kg dry		510			6	20
Vanadium	84.3		6.36	mg/kg dry		74.6			12	20
Zinc	52.5		25.4	mg/kg dry		51.2			3	20
Matrix Spike (L301189-MS1)		**Source: 1301037-01**		Prepared: 01/28/2013 Analyzed: 01/29/2013						
Aluminum	9720		14.6	mg/kg dry	194.75	7550	1120*	75-125		
Antimony	14.8		1.75	mg/kg dry	48.688	1.79 U	30*	75-125		
Arsenic	159		2.92	mg/kg dry	194.75	2.49	80	75-125		
Barium	251		1.46	mg/kg dry	194.75	68.7	94	75-125		
Beryllium	4.44		0.584	mg/kg dry	4.8688	0.305	85	75-125		
Boron	77.4		5.84	mg/kg dry	97.376	5.95 U	80	75-125		
Cadmium	4.05		0.584	mg/kg dry	4.8688	0.595 U	83	75-125		
Calcium	9890		292	mg/kg dry	2434.4	6100	156*	75-125		
Chromium	24.2		0.584	mg/kg dry	19.475	6.82	89	75-125		
Cobalt	50.9		5.84	mg/kg dry	48.688	10.0	84	75-125		
Copper	39.1		2.92	mg/kg dry	24.344	17.3	89	75-125		
Iron	30000		58.4	mg/kg dry	97.376	28100	1960*	75-125		
Lead	43.3		1.46	mg/kg dry	48.688	3.59	81	75-125		
Magnesium	7370		219	mg/kg dry	2434.4	4950	99	75-125		
Manganese	429		14.6	mg/kg dry	48.688	360	142*	75-125		
Molybdenum	78.8		5.84	mg/kg dry	97.376	5.95 U	81	75-125		
Nickel	48.8		11.7	mg/kg dry	48.688	8.29	83	75-125		
Potassium	3290		1170	mg/kg dry	2434.4	1160	88	75-125		
Selenium	154		0.876	mg/kg dry	194.75	0.893 U	79	75-125		
Silicon	539		5.84	mg/kg dry	97.376	362	182*	75-125		
Silver	3.78		0.584	mg/kg dry	4.8688	0.595 U	78	75-125		
Sodium	3050		146	mg/kg dry	2434.4	510	104	75-125		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

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 L301189 - SW 3050B									
Matrix Spike (L301189-MS1)		**Source: 1301037-01**	Prepared: 01/28/2013 Analyzed: 01/29/2013						
Vanadium	128	7.30	mg/kg dry	48.688	74.6	109	75-125		
Zinc	98.8	29.2	mg/kg dry	48.688	51.2	98	75-125		
Post Spike (L301189-PS1)		**Source: 1301037-01**	Prepared: 01/28/2013 Analyzed: 01/29/2013						
Aluminum	134000		ug/L	66000	76000	87	75-125		
Antimony	286		ug/L	300.00	-3.17	96	75-125		
Calcium	114000		ug/L	62400	61400	85	75-125		
Iron	380000		ug/L	126000	283000	77	75-125		
Manganese	6300		ug/L	3000.0	3630	89	75-125		
Silicon	9050		ug/L	6300.0	3640	86	75-125		
Reference (L301189-SRM1)			Prepared: 01/28/2013 Analyzed: 01/29/2013						
Aluminum	10300	15.0	mg/kg wet	6670.0		155	0-200.89		
Antimony	45.1	1.80	mg/kg wet	53.000		85	0-235.8		
Arsenic	112	3.00	mg/kg wet	114.00		98	82.8-117.54		
Barium	302	1.50	mg/kg wet	307.00		98	79.8-120.2		
Beryllium	108	0.600	mg/kg wet	108.00		100	82.8-117.6		
Boron	80.5	6.00	mg/kg wet	85.100		95	67.5-132.8		
Cadmium	224	0.600	mg/kg wet	225.00		100	83.6-116.4		
Calcium	3450	300	mg/kg wet	3360.0		103	83.3-116.9		
Chromium	84.6	0.600	mg/kg wet	77.200		110	73.3-126.4		
Cobalt	164	6.00	mg/kg wet	166.00		99	80.7-118.7		
Copper	263	3.00	mg/kg wet	271.00		97	80.8-119.2		
Iron	8530	60.0	mg/kg wet	8420.0		101	78.6-121.1		
Lead	186	1.50	mg/kg wet	190.00		98	81.6-118.4		
Magnesium	9230	225	mg/kg wet	8570.0		108	83.2-116.7		
Manganese	1080	15.0	mg/kg wet	965.00		112	69.3-130.5		
Molybdenum	229	6.00	mg/kg wet	235.00		98	76.2-123.8		
Nickel	221	12.0	mg/kg wet	221.00		100	79.6-120.8		
Potassium	14800	1200	mg/kg wet	14400		103	81.9-118.1		
Selenium	184	0.900	mg/kg wet	187.00		98	75.9-124.6		
Silicon	810	6.00	mg/kg wet	807.00		100	0-219.3		
Silver	82.0	0.600	mg/kg wet	83.500		98	82.7-117.1		
Sodium	9990	150	mg/kg wet	9730.0		103	82.5-117.2		
Vanadium	108	7.50	mg/kg wet	98.700		110	75.9-123.6		
Zinc	198	30.0	mg/kg wet	199.00		100	78.4-121.6		

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/08/2013 09:07

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 L301193 - SW 7471A Prep										
Blank (L301193-BLK1)				Prepared: 01/28/2013 Analyzed: 01/29/2013						
Mercury	0.0290	U	0.0290	mg/kg wet						
Duplicate (L301193-DUP1)		**Source: 1301037-01**		Prepared: 01/28/2013 Analyzed: 01/29/2013						
Mercury	0.0287	U	0.0287	mg/kg dry		0.0270 U				20
Matrix Spike (L301193-MS1)		**Source: 1301037-01**		Prepared: 01/28/2013 Analyzed: 01/29/2013						
Mercury	0.155		0.0256	mg/kg dry	0.14212	0.0270 U	109	75-125		20
Reference (L301193-SRM1)				Prepared: 01/28/2013 Analyzed: 01/29/2013						
Mercury	1.25		0.0273	mg/kg wet	1.2900		96.8	62.6-138		

Lionville Laboratory **Logbook #: 1194**

SAMPLE DIGESTION RECORD

Digestion Batch #: L301189
Date/Time Initiated: 1/28/13 1030
Date/Time Completed: 1/28/13 2130
Analyst: MW
Matrix (circle): (Soil) Water Other
Method (circle one): 3005A 3010A (3050) 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

(Digested) / Undigested (circle one)
Balance #: B19
Balance Cal Verification: (Y) NA
Temp: 95°
BLOCK 1 (3) 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
1301037-01		0.53	50		TC	coarse	brown soil, gravelly	lots of rocks	
L301189-DUP1		0.62	50			↓	↓ ↓	↓	
MS1	0.5	0.54	50			↓	↓ ↓	↓	
1301037-02		0.61	50			coarse	dark brown soil	rocks	
03		0.55	50			coarse	tan/grey gravelly	rocks	
04		0.58	50			coarse	brown soil	rocks	
L301189-BLK1		0.54	50			coarse	boiling dry	N/A	
SRM1	(X)	0.50	50		↓	fine	pink, sandy	↓	

MW 1/28/13

Spiking IDs / Expiration Date:
MS# : 1201581
LCS#: 1201014 (X)

Reagent IDs:
HNO_3 0000003390
HCl 000001830I
H_2O_2 L11A03
1:1 HNO_3 637-076-07
1:1 HCl

File ID#:

Data Review By/Date:
RMB 01/30/13

PREPARATION BENCH SHEET

L301189

Lionville Laboratory

Printed: 2/8/2013 8:44:21AM

0000000021

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
1301037-01	6010B ICP Trace	01/28/2013 10:30	0.53	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1301037-02	6010B ICP Trace	01/28/2013 10:30	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1301037-03	6010B ICP Trace	01/28/2013 10:30	0.55	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1301037-04	6010B ICP Trace	01/28/2013 10:30	0.58	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
L301189-BLK1	QC	01/28/2013 10:30	0.54	50						
L301189-DUP1	QC	01/28/2013 10:30	0.62	50		1301037-01				
L301189-MS1	QC	01/28/2013 10:30	0.54	50	1201581	1301037-01	500			
L301189-PS1	QC	01/28/2013 10:30	0.53	50	1201582	1301037-01	100			
L301189-SRM1	QC	01/28/2013 10:30	0.5	50	1201014		500			

Revision for initial wt. L301189-MS1 2/8/13

Extracts Relinquished By Date Extracts Received By Date

PREPARATION BENCH SHEET

L301189

Lionville Laboratory

Printed: 1/28/2013 10:05:27PM

00000022

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
1301037-01	6010B ICP Trace	01/28/2013 10:30	0.53	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1301037-02	6010B ICP Trace	01/28/2013 10:30	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1301037-03	6010B ICP Trace	01/28/2013 10:30	0.55	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1301037-04	6010B ICP Trace	01/28/2013 10:30	0.58	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
L301189-BLK1	QC	01/28/2013 10:30	0.54	50						
L301189-DUP1	QC	01/28/2013 10:30	0.62	50		1301037-01				
L301189-MS1	QC	01/28/2013 10:30	0.5	50	1201581	1301037-01	500			
L301189-PS1	QC	01/28/2013 10:30	0.53	50	1201582	1301037-01	100			
L301189-SRM1	QC	01/28/2013 10:30	0.5	50	1201014		500			

Extracts Relinquished By — Date: 1/28/13

Extracts Received By — Date: 01/29/13

Lionville Laboratory

MERCURY PREPARATION

Analyst: MLH
Date 1/28/13
Start Time/Temp: 2010/94°
End Time/Temp: 2040/96°

Instrument ID: HG3.1
Balance # B14 /NA
Pipette Calibration (Daily) (Y)

Logbook # 1198
Prep Batch: L301193
Worksheet: HG012901
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH <2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				10ml	50	
0.2 ug/L		0.100		10ml	50	
1.0 ug/L		0.500		10ml	50	
2.0 ug/L		1.000		10ml	50	
5.0 ug/L		2.500		10ml	50	
10.0 ug/L		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L301193-BLK1				0.31	50	
SRM1		#	#	0.33	50	
1301037-01				0.35	50	
L301193-DUP1				0.33	50	
MS1		0.500	1.0	0.37	50	
1301037-02				0.35	50	
03				0.35	50	
04				0.37	50	
1301050-01				0.35	50	
L301193-DUP2				0.37	50	
MS2		0.500	1.0	0.36	50	
1301050-02				0.35	50	
03				0.33	50	
04				0.35	50	
05				0.38	50	
1301059-01				0.31	50	RAM
L301193-DUP3				0.31	50	"
MS3		0.500	1.0	0.34	50	"

Standard:	ID	Prep Date/Time
ICAL/MS	RI 120/235	1/28/13 1330
ICV/CCV/LCS	(I.V 120/411)	N/A

Reviewed By/Date: PMP 01/30/13

see book # 1198 for std traceability information

Soil LCS True Value = 1.29 mg/Kg
Standard # 120/1041 (2)

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

0000000023

Lionville Laboratory

MERCURY PREPARATION

Analyst: MLH
Date 1/28/13
Start Time/Temp: Deep/0027
End Time/Temp:

Instrument ID: HG3.1
Balance # B14 /NA
Pipette Calibration (Daily) (Y) ____

Logbook # 1198
Prep Batch: L301193
Worksheet: HG012901
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH <2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
1301061-01				0.39	50	
L301193-DUP4				0.37	50	
MS4		0.500	1.0	0.37	50	
1301061-02				0.37	50	
03				0.33	50	
1301068-01				0.36	50	
L301193-DUP5				0.36	50	
MS5		0.500	1.0	0.37	50	

PMP 1/28/13

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

Soil LCS True Value = see page 0027 mg/Kg
Standard # ____

Reviewed By/Date: PMP, 01/30/13

see book # 1198 for std traceability information

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

WET CHEMISTRY

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-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/30/2013 18:05

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R614	1301037-01	Soil	01/15/2013 13:55	01/17/2013 09:35
J1R617	1301037-02	Soil	01/15/2013 13:40	01/17/2013 09:35
J1R623	1301037-03	Soil	01/15/2013 13:45	01/17/2013 09:35
J1R624	1301037-04	Soil	01/15/2013 13:50	01/17/2013 09:35

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-206 K4047
LVL#: 1301037 **Date Received:** 01-17-13

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 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.

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

5. The method blank for Hexavalent Chromium (Cr^{6+}) were within the method criteria.

6. The Laboratory Control Samples (LCS) for Cr^{6+} were within the laboratory control limits.

7. The matrix spike recoveries for Cr^{6+} were within the 75-125% control limits.

8. The replicate analyses were 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. The Laboratory Manager or a designee, as verified by the following signature, has authorized release of the data contained in this hard copy package.

Iain Daniels
Laboratory Manager
Lionville Laboratory

1/31/13
Date

njp\i01-037

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 9 pages.

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-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/30/2013 18:05

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

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-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/30/2013 18:05

Wet Chemistry

Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R614 (1301037-01) Soil									
%Solids	**95.1**		0.1	% by Weight	1	L301156	01/23/2013 10:47	01/23/2013 10:47	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L301196	01/28/2013 12:52	01/30/2013 16:00	SW846 7196A
J1R617 (1301037-02) Soil									
%Solids	**95.7**		0.1	% by Weight	1	L301156	01/23/2013 10:47	01/23/2013 10:47	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.52	mg/kg dry	1	L301196	01/28/2013 14:15	01/30/2013 16:00	SW846 7196A
J1R623 (1301037-03) Soil									
%Solids	**97.5**		0.1	% by Weight	1	L301156	01/23/2013 10:47	01/23/2013 10:47	SM2540G
Hexavalent Chromium	0.21 U	0.21	0.51	mg/kg dry	1	L301196	01/28/2013 14:15	01/30/2013 16:00	SW846 7196A
J1R624 (1301037-04) Soil									
%Solids	**87.7**		0.1	% by Weight	1	L301156	01/23/2013 10:47	01/23/2013 10:47	SM2540G
Hexavalent Chromium	0.23 U	0.23	0.57	mg/kg dry	1	L301196	01/28/2013 14:15	01/30/2013 16:00	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-206	
2620 Fermi Avenue	Project Number: K4047	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	01/30/2013 18:05

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L301156 - % Solids										
Duplicate (L301156-DUP1)	**Source: 1301037-01**			Prepared & Analyzed: 01/23/2013 10:47						
%Solids	94.8		0.1	% by Weight		95.1			0.3	20
Batch L301196 - Default Prep GenChem										
Blank (L301196-BLK1)				Prepared: 01/28/2013 12:52 Analyzed: 01/30/2013 16:00						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L301196-BS1)				Prepared: 01/28/2013 12:52 Analyzed: 01/30/2013 16:00						
Hexavalent Chromium	4.01	0.20	0.50	mg/kg wet	4.0000		100	80-120		
LCS (L301196-BS2)				Prepared: 01/28/2013 12:52 Analyzed: 01/30/2013 16:00						
Hexavalent Chromium	1160 D	20.0	50.0	mg/kg wet	1242.9		93	80-120		
Duplicate (L301196-DUP1)	**Source: 1301037-01**			Prepared: 01/28/2013 12:52 Analyzed: 01/30/2013 16:00						
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry		0.21 U				20
Matrix Spike (L301196-MS1)	**Source: 1301037-01**			Prepared: 01/28/2013 12:52 Analyzed: 01/30/2013 16:00						
Hexavalent Chromium	3.97	0.21	0.53	mg/kg dry	4.2066	0.21 U	94	75-125		
Matrix Spike (L301196-MS2)	**Source: 1301037-01**			Prepared: 01/28/2013 12:52 Analyzed: 01/30/2013 16:00						
Hexavalent Chromium	1140 D	21.0	52.6	mg/kg dry	1293.6	0.21 U	88	75-125		